INTERIOR BOARD OF LAND APPEALS

United States
v.
Pass Minerals, Inc., Kiminco, Inc., Pilot Plant, Inc., and K. Ian Matheson

68 IBLA 115 (March 16, 2006)

UNITED STATES
v.
PASS MINERALS, INC.
KIMINCO, INC.
PILOT PLANT, INC.
K. IAN MATHESON

IBLA 2003-268 Decided March 16, 2006

Appeal from a decision of Administrative Law Judge Harvey C. Sweitzer declaring two placer mining claims null and void for lack of a discovery, and cancelling the mineral entries. Contest No. N-66052.

Affirmed.

1. Mining Claims: Contests--Mining Claims: Determination of Validity--Mining Claims: Discovery: Generally--Mining Claims: Placer Claims

To be valid, a mining claim must contain, within its boundaries, a "valuable mineral deposit." The "prudent man" test determines whether a discovery of a valuable mineral deposit has been made. A discovery has been made when minerals have been found and the evidence is of such a character that a person of ordinary prudence would be justified in the further expenditure of his labor and means with a reasonable prospect of success in developing a paying mine. Assumptions regarding a prudent person are based on objective standards related to the nature of the mineral deposit disclosed on the claim, and not on the attributes or circumstances of the claimant. A mining claimant must show, as an objective matter and as a present fact, considering historic price and cost factors and assuming they will continue, that there is a reasonable likelihood that a paying mine can be developed.

2. Mining Claims: Contests--Mining Claims: Determination of Validity--Mining Claims: Discovery: Generally--Mining Claims: Placer Claims

The test of discovery includes a "marketability test." The "prudent man test" and the "marketability test" are not distinct standards; the latter is a refinement of the former. Evidence of a claimant's willingness to develop a claim does not establish the existence of a discovery. Instead, the claimant must show that there is a reasonable prospect that the commercial value of the deposit will exceed the cost of extracting, processing, transporting, and marketing the mineral.

3. Mining Claims: Contests--Mining Claims: Determination of Validity--Mining Claims: Discovery: Generally--Mining Claims: Lands Subject to--Mining Claims: Withdrawn Land--Withdrawals and Reservations: Effect of

When land embracing the contested mining claims has been segregated for inclusion in a land exchange, a mining claimant acquires rights which cannot be cancelled by the segregation only if the claim is perfected, including discovery, on the date of segregation. The deposit must be physically exposed as of the date of segregation, and the discovery must be based upon showings of mineral value from the mineral deposit that was exposed as of the segregation date. Once a discovery has been made, it must be maintained. A discovery must exist and present marketability must be shown as of the date of the segregation and as of the date of the hearing, and no further exploration to physically expose valuable minerals of sufficient quality and quantity to constitute discovery can be permitted after the date of segregation.

4. Evidence: Prima Facie Case--Mining Claims: Contests--Mining Claims: Determination of Validity--Mining Claims: Discovery: Generally

When the Government contests a mining claim based on a charge of lack of discovery of a valuable mineral deposit, it has the burden of going forward with sufficient evidence to establish a prima facie case. A prima facie

case is made when, on the basis of probative evidence of the character, quality and extent of the mineralization, a Government mineral examiner offers his expert opinion that a discovery of a valuable mineral deposit has not been made within the boundaries of a contested claim. Once a prima facie case has been established, the Contestee has the burden of overcoming the prima facie case by a preponderance of the evidence.

5. Mining Claims: Lands Subject to--Mining Claims: Withdrawn Land--Public Records--Withdrawals and Reservations: Effect of

The validity of the segregation of lands embracing contested mining claims for purposes of a land exchange is not justiciable. Even if the segregation was justiciable, under the notation rule, no rights incompatible with the use so noted in BLM's land records can attach until the record is changed to show that the land is no longer segregated.

6. Administrative Appeals: Generally--Evidence: Generally

The party appealing has the burden of showing error in the Administrative Law Judge's decision. An appellant must show adequate reason for appeal with some particularity, and support the allegations with arguments or appropriate evidence showing error.

7. Administrative Procedure: Administrative Review--Administrative Procedure: Burden of Proof-- Evidence

In reviewing an administrative law judge's decision in a mining contest, we review the record developed before the judge. Post-hearing evidence will be reviewed by this Board only to determine whether another hearing is appropriate.

8. Administrative Procedure: Administrative Review--Administrative Procedure: Burden of Proof--Evidence--Mining Claims: Contests--Mining Claims: Determination of Validity

> To warrant another hearing, a mining claimant whose claims have been declared invalid for lack of discovery must demonstrate that the evidence proffered on appeal could result in a changed outcome, that is, that the claims are supported by a discovery of a valuable mineral deposit.

APPEARANCES: K. Ian Matheson, Henderson, Nevada, *pro se* and for corporate parties; John W. Steiger, Esq., Office of the Regional Solicitor, Intermountain Region, U.S. Department of the Interior, Salt Lake City, Utah, for the Bureau of Land Management.

OPINION BY ADMINISTRATIVE JUDGE PRICE

Pass Minerals, Inc. (PMI), Kiminco, Inc. (Kiminco), Pilot Plant, Inc. (Pilot), and K. Ian Matheson have timely appealed the May 8, 2003, decision of Adminstrative Law Judge Harvey C. Sweitzer declaring the Mijo Nos. 16 and 17 placer mining claims invalid for failure to make a discovery of a valuable mineral deposit. [1/] The Bureau of Land Management (BLM) filed a contest complaint on November 16, 1999, challenging the validity of the Mijo claims on three grounds:

[1/] PMI owns the 160-acre Mijo No. 16 association placer claim. Kiminco owns the 160-acre Mijo No. 17 association placer claim. The shareholders of PMI are Contestees Pilot, Kiminco, and a defunct company called Pure Air. The shareholders of Kiminco are Matheson, his wife, Debra Matheson, and Pilot. (Decision at 3, citing Transcript Volume 3 at 579 (Tr. v. 3:579).) The shareholders of Pilot are Debra Matheson's three children. (Decision at 3, citing Tr. v. 2:480, 482.) The Mijo claims lie within the Alunite Mining District, in sec. 14, T. 23 S., R. 63 E., Mt. Diablo Meridian, in
Clark County, Nevada. (Ex. 2, Mineral Report, at p. i.) The claims were located on Dec. 16, 1983. (Decision at 1.) PMI's Mijo 16 borders Kiminco's Mijo 17 to the north. Pilot holds the Becki M mill site claim, which overlaps the Mijo 16 and extends to the east. (Decision at 4, citing Ex. 2, Mineral Report, at 2; Ex. HH; Tr. v. 3:734-35; v. 23:2849-50.)

The land encompassed by the Mijo claims was segregated from mineral entry on June 6, 1994, for purposes of a proposed land exchange. (Ex. 2, Mineral Report, at 3.) Prior to expiration of that segregation, the land was withdrawn by another segregation on July 23, 1997, which provides that it shall expire in five years. (Ex. 2, Mineral Report, at 3.) Both segregations were timely noted on the Master Title Plat. (Decision at 4, citing Tr. v. 39:5758-59.) It appears a proposed land exchange including the Mijo claims is still pending, so that the lands remained segregated as of and through the conclusion of the hearing and post-hearing briefing. (Decision at 4, citing Tr. v. 9:1572-73; v. 38:5760, 5790-91; v. 39:5802-03.)

(1) lack of a discovery of a valuable mineral deposit; (2) that the claims are nonmineral in character; and (3) that the claims are not held in good faith. The complaint named PMI, Kiminico, Matheson, Pilot, Rick J. Vincent, Sr., Luther Hendrickson, Brookline Mining Co., Arby J. Vincent, and James T. Roe, III, as Contestees. The latter five parties did not answer the complaint, and accordingly, the complaint allegations were deemed admitted by them and the contest was dismissed as to them. (Decision at 1, citing Tr. v. 1:15). [2/]

Judge Sweitzer issued his 95-page decision after 41 days of hearings held between April 2000 and February 2002, and after extensive post-hearing briefing. [3/] Finding that the Government had presented a prima facie case that the Mijo claims are not supported by a discovery of a valuable mineral deposit, Judge Sweitzer found it unnecessary to reach the charges that the claims are nonmineral in character and not held in good faith. (Decision at 2.)

On appeal, the mining claimants ultimately seek a new hearing on the basis of evidence submitted to this Board. They have filed an extensive statement of reasons (SOR), a good portion of which merely states or restates appellants' convictions and position, rather than directly alleging specific error in Judge Sweitzer's decision. Other portions are more akin to commentary or pose questions, so that appellants' arguments are difficult to discern. Because of the factual or legal predicates that are necessary to, or fairly may be implicit in, the issues appellants have articulated or attempted to express on appeal, and Matheson's status as a *pro se* party, as we discuss the evidence and testimony adduced at the hearing and the judge's rulings, we will also state our determinations regarding whether and to what extent the record supports those findings and conclusions. In this fashion, we expect to dispose of all of appellants' arguments, both expressed and implied.

Background

There has been no reported history of precious metals on the Mijo claims. (Decision at 3-4, citing Mineral Report at 1.) Appellants contend, however, that the claims contain gold, silver, and platinum group elements (PGEs), also referred to as platinum group metals , [4/] that the gold cannot be detected by standard fire assay for

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[2/] The Government's exhibits are numbered, and Contestees' exhibits are lettered.

[3/] Judge Sweitzer acknowledges that his decision "incorporates portions of contestant's briefs where deemed apropos, without further attribution herein." (Decision at 2.)

[4/] PGEs include ruthenium, rhodium, palladium, osmium, iridium, and platinum. *A Dictionary of Mining, Mineral, and Related Terms*, Bureau of Mines, U.S. Department (continued...)

a number of reasons, but mainly because the gold is colloidal and encased in highly refractory materials. [5/] (Decision at 4.) Appellants were operating pursuant to a plan of operations (PoO) formerly serialized as N54-95-031P, now serialized as N–72144, that was approved on May 24, 1996. [6/]

The validity examination was triggered when BLM learned that PMI had been selling mineral material to Hanson Aggregates, (Hanson) Las Vegas, that had been crushed and blended to meet local "type 2 road base" standards. (Ex. 2, Mineral Report at 1.) [7/] The mineral examination was conducted by Burrett W. Clay and Matthew W. Shumaker, both of whom are very experienced mineral examiners. Their Mineral Report was admitted in evidence during Clay's testimony as contestant's Ex. 2. (Decision at 15.) Shumaker and Clay initially were to examine the Mijo 16 mining claim, but determined to include the adjacent Mijo 17 mining claim and four lode mining claims co-located on the same ground. Id. [8/] Mining operations on the Mijo claims were suspended by BLM pending completion of the validity examination, but that suspension was reversed by this Board. [9/] The Mineral

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[4/] (...continued)
of the Interior (1968). These elements are "extremely rare." (Ex. 2, Mineral Report at 6.)

[5/] A "*refractory*" is a nonmetallic material with a very high melting point. The term also may be used as an adjective. *A Dictionary of Mining, Mineral, and Related Terms*, Bureau of Mines, U.S. Department of the Interior (1968).

[6/] On Oct. 29, 2002, BLM issued an order in which it determined that mining operations on the "Mijo 16 project" exceeded the scope of PMI's approved PoO and did not comply with the provisions of 43 CFR Subpart 3715 and 3809, and required the submission of a new PoO. Appellants' appeal was docketed as IBLA 2003-78 and was consolidated with their appeal of a BLM decision that subsequently revoked the PoO, docketed as IBLA 2004-26. The order and appeal in IBLA 2003-78 were dismissed as moot, and the decision in IBLA 2004-26 was affirmed. Pass Minerals, Inc., 168 IBLA 164 (2006).

[7/] BLM issued a trespass notice on Jan. 11, 1999, to PMI and Hanson. By the time removal operations ceased, Hanson had removed 23,168 tons of material. "Type 2 road base" consists of a specific mix of sand, gravel, clay and silt that is designed to pack well in road construction. (Ex. 2, Mineral Report at 1.)

[8/] It appears the four lode claims were declared abandoned for failure to pay claim maintenance fees, and therefore were no longer at issue in the contest proceedings. (BLM's Post-Hearing Brief at 4.)

[9/] The mining PoO was suspended by decision of the LVFO dated Apr. 5, 1999. In a (continued...)

Examiners rejected the assay data on which appellants relied for a variety of reasons and, on the basis of other assays they deemed reliable, concluded that the Mijo 16 and 17 claims contained precious metal values in concentrations no greater than the average crustal abundance of those metals, and that appellants would lose $0.87 per ton on the mining operation they proposed. Accordingly, contest proceedings were instituted.

Statement of Applicable Law

[1] To be valid, a mining claim must contain, within its boundaries, a "valuable mineral deposit." United States v. Collord, 128 IBLA 266, 268 (1994), aff'd in relevant part, rev'd in part, No. 94-0432-S-EJL (D. Idaho Sept. 28, 1994), aff'd, 154 F.3d 933 (9th Cir. 1998) (citing 30 U.S.C. § 22; Best v. Humboldt Placer Mining Co., 371 U.S. 334, 335 (1963)). The "prudent man" test determines whether a discovery of a valuable mineral deposit has been made. A discovery has been made when "minerals have been found and the evidence is of such a character that a person of ordinary prudence would be justified in the further expenditure of his labor and means, with a reasonable prospect of success, in developing a paying mine." United States v. Coleman, 390 U.S. 599 (1968); Castle v. Womble, 19 L.D. 455, 457 (1894); Converse v. Udall, 399 F.2d 616 (9th Cir. 1968), cert. denied, 393 U.S. 1025 (1969); United States v. Lederer, 144 IBLA 1, 9 (1998). Assumptions regarding a prudent person are based on objective standards related to the nature of the mineral deposit disclosed on the claim, and not on the attributes or circumstances of the claimant. United States v. Lehmann, 161 IBLA 40, 42 (2004), and cases cited; United States v. Waters (On Reconsideration), 159 IBLA 248, 254 n.8 (2003); United States v. Oneida Perlite, 57 IBLA 167, 190, 88 I.D. 772, 785 (1981). A mining claimant must show, as an objective matter and "as a present fact, considering historic price and cost factors and assuming that they will continue, there is a reasonable likelihood of success that a paying mine can be developed." In re Pacific Coast Molybdenum Co., 75 IBLA 16, 29, 90 I.D. 352, 360 (1983).

[2] The test of discovery has been considered to include a "marketability test." The Supreme Court adopted this refinement of the rules regarding discovery in United States v. Coleman, 390 U.S. at 602-03, declaring that the discovery of a valuable mineral deposit requires a showing that the deposit is ultimately marketable at a profit. As the Court stated, the "prudent-man test and the marketability test are not distinct standards, but are complementary in that the latter is a refinement of the

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[2/] (...continued)
case of first impression, on Nov. 3, 1999, the Board held that a suspension of a mining plan of operations is not justified until after the completion and approval of a mining claim validity examination and the initiation of a contest. Pass Minerals, Inc., 151 IBLA 78, 87 (1999).

former." Id. at 603. Board decisions have squared Coleman's profitability test with the requirement of a "reasonable prospect of success" adopted by the Supreme Court in Chrisman v. Miller, 197 U.S. 313, 322 (1905). Discovery thus requires a showing of a reasonable prospect that the deposit can be mined, removed, and marketed at a profit. United States v. Lehmann, 161 IBLA at 42; United States v. New York Mines, Inc., 105 IBLA 171, 182, 95 I.D. 223, 229-30 (1989). Evidence of a claimant's willingness to develop a claim does not establish the existence of a discovery. United States v. Foresyth, 100 IBLA 185, 209-10, 94 I.D. 453, 467 (1987). Even when a claimant is actually mining a claim at a small profit, a finding of no discovery will be justified because "a prudent man would not develop a mine which promised a profit below the return for a commercial venture." United States v. Kottinger, 14 IBLA 10, 16 (1973).

[3] The date of segregation or withdrawal of public lands from mineral entry is critical because a mining claimant acquires rights which cannot be cancelled by the segregation if the claim has been perfected, including discovery, on the date of the segregation or withdrawal. United States v. Mavros, 122 IBLA 297, 301-02 (1992). Once a discovery has been made, it must be maintained until a patent application has been perfected and equitable title has vested. Id. Accordingly, a discovery must exist and present marketability must be shown as of the date of the segregation and as of the date of the hearing, and no further exploration to physically expose valuable mineral of sufficient quality and quantity to constitute a discovery can be permitted after the date of segregation. Id.

The exposure within the claim of a mineral deposit containing mineral values worth exploiting is a necessary precondition to the discovery of a valuable mineral deposit. See United States v. Feezor, 74 IBLA 56, 74, 90 I.D. 262, 272 (1983); United States v. Gunsight Mining Company, 5 IBLA 62, 69 (1972). The deposit must be physically exposed as of the date of segregation, and the discovery must be based upon showings of mineral value from the mineral deposit that was exposed prior to the segregation date. See United States v. Converse, A-30177, 72 I.D. 141, 146 (1965), aff'd, 262 F.Supp. 583 (D. Or. 1966), aff'd, 399 F.2d 616 (9th Cir. 1968), cert. denied, 393 U.S. 1025 (1969); Marvel Mining Co. v. Sinclair Oil & Gas Co., A-30871, 75 I.D. 407, 419-20 (1968). Sample data collected after the segregation may be used to establish the existence of a valuable mineral deposit as of the date of segregation, bearing in mind that there is a distinction between discovery of a valuable mineral deposit and sampling to verify the value of the deposit. United States v. Waters, 146 IBLA 172, 182 (1998). It is the date of the exposure of the mineral source, not the date of sampling, that controls. Id.; Converse, 72 I.D. at 146.

[4] When the Government contests the validity of a mining claim, it bears only the burden of going forward with sufficient evidence to establish a prima facie case. United States v. Knoblock, 131 IBLA 81, 48, 101 I.D. 123, 141 (1994).

Whether the Government has presented a prima facie case is necessarily limited to the evidence presented by the Government in its case-in-chief. Id. A prima facie case is made when, on the basis of probative evidence of the character, quality, and extent of the mineralization, a Government mineral examiner offers his expert opinion that a discovery of a valuable mineral deposit has not been made within the boundaries of a contested claim. United States v. Winkley, 160 IBLA 126, 143 (2003). Once a prima facie case is presented, the burden shifts to the claimant to overcome the Government's showing by a preponderance of the evidence, but only with respect to those issues for which the Government has established a prima facie case. United States v. Miller, 138 IBLA 246, 268-70 (1997); United States v. Multiple Use, Inc., 120 IBLA 63, 110 (1991).

The Evidence and Judge Sweitzer's Findings and Conclusions

The Mineral Report was admitted in evidence as Ex. 2 through Clay. Shumaker's and Clay's education, training, and experience were established in due course. Their testimony, with that of Roger Haskins, a geologist and Senior Specialist in Mining Law Adjudication in BLM's Washington D.C. office, who was also qualified as an expert, supported and confirmed the following findings and conclusions contained in the report. In the course of conducting the mineral examination of the Mijo claims the Mineral Examiners accepted assay reports from a great variety of assayers retained by Matheson over the years, and also sampled the claims in Matheson's presence or in the presence of his representative on three dates in 1999. (Ex. 2, Mineral Report at 20.) The Mineral Report summed up the assay reports supplied by Matheson as follows:

> Unfortunately, the reports do not systematically or reliably pinpoint sample locations, sample sizes, depths, methods of analysis, and the detection limits of the analysis method(s). It is doubtful that the locations of more than a few sample locations could be found again on the ground. In other cases, the assay reports provided to us by Matheson are for other claims in the southern end of Clark County. These appear to be in the same vicinity as the Josh project claims explored by Delgratia. [10/]

10/ Delgratia is a reference to Delgratia Mining, Inc., now called Central Minera, and the alleged "salting" scam to which it fell victim in the mid-1990s. Delgratia was induced to acquire a large interest in a number of claims collectively known as the "Josh claims" or the "Josh project" located in Clark County, Nevada, after being presented with assay results apparently demonstrating extraordinary gold values in the claims. Ultimately, it was concluded that the Josh claims contained only insignificant quantities of gold and that samples had been salted. Delgratia's stock

(continued...)

(Ex. 2, Mineral Report at 11.)

In contrast, BLM's sampling procedure was as follows. Matheson or his representative selected each of the sites to be sampled and observed the taking of samples. Five samples were collected on March 9, 1999; four samples were taken on April 14; and on May 13, three samples were taken. These locations are depicted on Map 3 of the Mineral Report, Sample Locations, Ex. 2. The Mineral Report states:

> Evaluating a precious metal placer will normally require the collection of a number of channel or bulk samples, frequently of a cubic yard or larger. Because of the heterogenous nature of precious metal placer deposits and the comparatively large size of placer gold particles, it is unwise to split a sample (Wells, 1989). In this instance, because of the issues raised by the claimant, we attempted to duplicate the claimant's methods to the extent possible, including collecting a number of samples by his methods. We also collected two bulk placer samples, each approximately 2/3 loose cubic yard in size, which we processed by normal, industry-accepted placer methods.
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> Most consistently, the claimant has reported that "the precious metals were contained in the 1/4" minus fraction," or the "magnetic portion of the 1/4" minus fraction," or "the nonmagnetic portion of the magnetic portion of the 1/4 inch minus fraction." The processing plant they had on site was setup [sic] to separate the magnetic fraction from the non-magnetic portion. Based on our observations, and Matheson's description of their sampling methods, it appears that their basic method was either to shovel a small (2 or 3 pounds) quantity of the fine material into a plastic bag, or to put a screen on a 5 gallon bucket and shovel material into it, discarding the 1/4 inch plus fraction.

(Ex. 2, Mineral Report at 20-21.) As stated, samples were sent to a number of assayers. To control quality, BLM submitted simple and complex blanks, standards, knowns, and duplicates. Id. at 21. The data was presented as Table 11A-1, Sample Source and Number Correlation Chart. Id. at 21-22. A "blank" consists of material, often silica sand or hardware sand, that is known to contain none of the precious minerals of interest in the examination. The presence of silica sand or hardware store sand are obvious when submitted with sample material, so that a "complex blank" is preferred. A complex blank consists of material that resembles one or more

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[10/] (...continued)
plummeted, and Federal and State investigations and a number of class action lawsuits ensued. See Attachments 1-2a-2e, 8-1a-1c, 8-2a-2c to the Ex. 2, Mineral Report; Decision at 24-30; Exs. 8 to 89.

of the samples, is known to contain no precious metals above background or average crustal abundance levels or the detection limits of standard analytical methods, and contains a variety of other minerals that may also occur in the actual sample, which causes the blank to behave more like a sample during analysis. A "standard," also known as a "reference material," has been tested by a number of independent assayers and determined to contain a predictable concentration of one or more metal elements." (Ex. 2, Mineral Report at 27.) A "known" is similar to a standard, but it has not been subjected to the same degree of independent testing, and assay results can be expected to vary somewhat more than a standard.

Shumaker and Clay developed two complex blanks that resembled screened Mijo material. One consisted of mineral matter from Clay's back yard, and the other, used more frequently, consisted of mineral matter from Shumaker's front yard. With one exception, these complex blanks were submitted as blanks to the assayer. In the case of White Technologies, the one exception, the blank sample was hardware store sand. In all sets submitted to White Technologies, Complex Metals Research & Development of La Verkin, Utah (Complex Metals), Metallurgical Research and Analysis Laboratory of Henderson, Nevada (MRAL), and Legend Laboratories of Reno, Nevada (Legend), one or more of the complex blanks derived from the Mineral Examiners' yards was substituted for, and labeled as, a sample actually collected on the Mijo claims.

As a final verification round, a block of Mijo mineral material, complex blanks, a standard, and a known were sent to Legend, Chemex Laboratories of Sparks, Nevada (Chemex), and Bondar-Clegg of Vancouver, British Columbia. Those samples were crushed and pulverized in BLM's National Training Center laboratory before shipping to Legend, Chemex, and Bondar-Clegg. Each sample was homogenized and split into several duplicate sets. A standard sample was purchased from the Nevada Bureau of Mines and Geology (NBMG) and was designated "2b" by that organization. (Ex. 2, Mineral Report at 25.) Shumaker and Clay spooned NBMG Standard 2b material directly from the stock jar. Only individual samples of Shumaker's yard were submitted to Legend, Chemex, and Bondar-Clegg. Because of these preparations and the anonymity of the submission, it was not necessary to submit a complex. Id. at 27-28.

Matheson selected White, Complex Metals, and MRAL to assay samples. BLM selected Legend, Chemex, and Bondar-Clegg. (Ex. 2, Mineral Report at 26.)

BLM had the samples assayed according to standard fire assay protocols and methods, and according to those dictated by Matheson as well. The details of the sampling protocols employed at each laboratory are explained in the Mineral Report at 28-44 and reported in Tables 11B-1 through 11B-10. In the presence of the Mineral Examiners, White initially assayed six samples using the firing process

described in the Mineral Report at 28. After the Mineral Examiners left, White apparently ground and reassayed the slag and cupels from each sample five times, after which the concentrations were added up to produce a single result. (Ex. 2, Mineral Report at 28-29.) In addition, a second split of the complex blank labeled as sample 13 was assayed by White at Matheson's request and expense. Id. at 29. (Ex. 2, Mineral Report at 29.) Conditions inside White's laboratory were not neat or orderly and favored cross-contamination, because the laboratory was "cluttered and dusty," and chemicals were stored in inappropriate containers and in an inappropriate and perhaps dangerous manner. The repeated assays of the slag and cupels introduced significant inaccuracy. [11/] White reported the three highest gold values from complex blanks, which included the samples from the Examiners' yards, and for even these results, the Mineral Report concluded that White reported a degree of deviation that "is simply unacceptable." Id. [12/]

Complex Metals is or was operated by Jerry C. Henderson. According to Matheson, Henderson was able to run screened samples over a U-tech table and produce "concentrates with visible precious metals." Id. at 31. Henderson's facilities, consisting of two buildings, were described as extremely cluttered, dusty, and disorderly, including open and unlabeled bags, buckets and bottles on every surface, evidence of an explosion that had left a black, friable residue on the walls and ceiling, and corroded metal surfaces attributed to acid mist in the air. Id. at 34. The samples were taken from the Mijo 17, but included the complex blanks from Clay's and Shumaker's yards. Henderson's processing method is described in the Mineral Report at 31-32, and the results are reported as Table 11B-2 at 33. Legend was retained by BLM to monitor and evaluate Henderson's processing of the samples. To put the

[11/] According to the Mineral Report, the usual practice is to assay the slag and cupel from a fire assay one time, which permits the assayer to determine the amount of precious metals lost to the slag or cupel. Typically that number is "very small or zero." (Ex. 2, Mineral Report at 30.) Litharge and silver inquart are used in most fire assays and each contains "minuscule concentrations" of gold and silver, an occurrence that is "just a fact of nature." Id. Those amounts remain minuscule when a fire assay is performed according to normal practice. When the slag and cupel are repeatedly re-assayed, the gold and silver contaminants become measurable. Cross-contamination from dust contributes to the false result. If the contaminant gold and silver values are not subtracted, their values will be incorrectly ascribed to the sample. "The error will be insignificant where the sample actually contains multiple-ounce per ton concentrations of gold and silver, but will portray false values where the samples are actually barren." Id.

[12/] For example, "the gold value reported for sample 5, set 2 is more than double the value reported for sample 5[,] set 1." (Ex. 2, Mineral Report at 30.) What was labeled as sample 5 was actually material from Shumaker's yard. Id. at 29.

matter bluntly, BLM and Legend concluded that Henderson had salted the sample material with rust-, gold-, and copper-colored metal balls. He purportedly recovered these balls from the screened sample material, apparently to prove or substantiate his and Matheson's assertion that the Mijo group contains native or elemental silver. However, the Mineral Examiners stated that they had not observed any such metal balls in any of the samples or the complex blanks, and acknowledged that Henderson had had ample opportunity to add them after the samples arrived at his facility. Id. at 34. Legend later determined that the balls were silver. They were photographed. See Photographs L-12, l-13, L-15, L-26, L-27, and L-28 appended to the Mineral Report. The Mineral Report states that the sample material passed through a 16 mesh screen, but "silver colored soft metal balls and what appeared to be glassy slag remained on the screen," obviously placed in the sample material "without much regard to the size fraction that they should have matched." The Mineral Examiners observed that, had the silver balls been transported in the alluvial fan with the mineral material from the Mijo claims, the slag would have been knocked off the soft metal spheres, which would have been battered flat. In addition, glass is not normally associated with elemental native silver or gold. The impact was described as follows:

> The effect of the addition of a one milligram piece of gold or silver, about the size of the head of a pin to a one assay ton sample (29.14 grams) would be to produce an additional one ounce per ton in the reported result. However, if only five grams of sample is analyzed, the addition of a one milligram piece of gold or silver would raise the reported result by about six ounces per ton.

Id. at 35. Complex Metals reported gold three times higher than White's results for a split of the same sample, whereas Legend concluded that the results for gold, silver, and PGEs were below detection limits. Complex Metals also found gold values in the complex blanks, and gold values for sample 11S, which actually was Standard 2b purchased from NBMG. Accordingly, BLM disregarded Complex Metals' sample results for any purpose, and concluded that independent verification by an unrelated laboratory was necessary. Id. at 35-36.

BLM delivered three samples to MRAL, another of the laboratories selected by Matheson, on May 13, 1999. All three samples were collected earlier that morning. These consisted of three 5-gallon buckets of mineral material screened to minus 1/4 inch, labeled samples 13, 14, and 15 collected from the Mijo 16 and 17. Sample 13 was replaced with a complex blank consisting of a 5-gallon bucket of screened material from Shumaker's yard, which was labeled B-1 by MRAL. Id. Standards and blanks clearly identified as such were submitted at the same time. NBMG's Standard 2b was labeled 13(S-1) by MRAL. The other standard was acquired from the Montana Bureau of Mines and Geology (MBMG), and consisted of Stillwater Mining

Company's platinum and palladium mill concentrates, accompanied by Stillwater's assay data. Id. at 36.

MRAL's preparation of the samples is described in the Mineral Report at 36. After the mineral material was screened and washed, the light material was separated from the heavy, the magnetic material was separated from the heavy material, and then the separated fractions were placed in a drying oven. Further handling or processing apparently occurred after BLM left the laboratory. Id. MRAL reportedly assayed the unwashed material by Direct Coupled Plasma Arc (DCPA). Laboratory conditions were described as cluttered, all exposed metal had rusted, the DCPA instrument was housed in a dusty office, and reagents were informally stored. Id. at 38. MRAL's laboratory technique was deemed "poor, sloppy, and careless," so that cross-contamination occurred. Sample spillage occurred, and was lost or not accounted for in the final weights. Id. at 38. The results are provided as Table 11B-3, and they show that MRAL reported "wildly incorrect results for blanks and standards":

> MRAL reported blank samples as high grade material when they were labeled as Mijo group samples, and as barren when they were identified as blanks. MRAL's reported results for the standards were also incorrect. They reported the gold concentration in NBMG standard 2b as 0.78 ounces per ton in one assay, then as 1.92 ounces per ton in another. Neither was correct, and both were too high. NBMG reports gold concentration in standard 2b as 0.220 ounces per ton, plus or minus 0.008 ounces per ton. [Regarding the Stillwater Mining Company's mill concentrates,] MRAL reported zero platinum, where they should have found 17.2 ounces per ton. Even allowing for poor lab technique and inaccuracy, *some* platinum should have been reported. On the other hand, MRAL reported 96.68 ounces per ton of palladium when they should have found 58.5 ounces per ton. Even adding the MBMG standard values for platinum and palladium together still does not produce 96.68 ounces per ton.

Id. at 38. Accordingly, BLM determined that MRAL's results could not be accepted for any purpose, and that independent verification by an unrelated laboratory was necessary.

Three identical suites of six prepared samples were assembled and sent to Legend, Bondar-Clegg, and Chemex. Because Mark Lewis, the manager of Legend,

had witnessed the proceedings at Complex Metals, BLM inspected the Legend laboratory on June 10, 1999. [13/] That laboratory was found to be neat, orderly, and adequately ventilated, with measures in place to control acid mist and dust. Chemicals were properly stored, and when in use, spill collection trays were also used. Industrial "clean room" conditions were in place where precision work is performed, and blanks and knowns were routinely analyzed with each batch, including random duplications of sample analyses. Id. at 39.

Legend, Bondar-Clegg, and Chemex all reported blanks as barren and standards within the expected, acceptable concentration range. Duplicates submitted to Legend produced duplicate results. Bondar-Clegg performed a fire assay with nickel sulfide collector, a method deemed

> extremely accurate, with very low detection limits, capable of detecting concentrations in the range of average crustal abundance (Table 11B-8). Bondar-Clegg did find gold in extremely minuscule, average crustal abundance level, concentrations in both Mijo samples and in the complex blank. The greatest concentration reported was for Sample 22B, which is a split from Sample 15. That concentration amounts to *four point five ten-thousandths of a troy ounce per ton* (0.00045 ounces per ton). That value is one hundred times leaner than the lowest grade extracted from a modern disseminated gold mine.

Id. at 42; see Tr. v. 1:164. Bondar-Clegg reported slightly higher concentrations of gold in the NBMG Standard 2b than Legend or Chemex, likely because of some settling of the material in its jar, but this difference was deemed insignificant. Id. at 43. Legend's and Chemex's results were "very similar." Id. Accordingly, BLM accepted these laboratories' sample results, which are presented in Tables 11B-5 through 11B-10. Id. at 40-44. Those results show a "minuscule concentration of precious metals." Id. at 45.

After the Mineral Report was completed, at BLM's request, samples from the Mijo claims were assayed by Dr. Paul Lechler of the NBMG, Dr. Ralph Pray, Chemex, and the Center for Advanced Mineral and Metallurgical Processing (CAMP), all of whom found no gold or only trace amounts, using several assay techniques. (Decision at 16, citing Exs. 4, 5, 39, 43, 45, 67; Tr. v. 1:39-40; Tr. v. 37:5494-95, 5506-08; v. 38:5734-36, 5840-42, 5901-09; 40:5967-71.)

[13/] BLM did not similarly inspect the laboratories of Bondar-Clegg and Chemex because the Mineral Examiners are well-acquainted with both laboratories and their professional reputations. Id. at 41, 43.

In 2001, the Mineral Examiners sent samples to assayers used by Contestees or by Arby Vincent, one of the original co-locators of the Mijo claims. Vincent was deceased when the contest hearing commenced. Samples were sent to Dr. W. T. Yen of Queens University in British Columbia, Dr. Donald Jordan of MRAL, Claire Rogers, the owner of Rogers Research, and Roger Smid. As with the other samples, these included blanks from Shumaker's front yard and various standards which were identified as samples from the Eldorado Valley or were unidentified. Shumaker testified that the assay results of all of these individuals were "incompetent." (Decision at 18, citing Tr. v. 39:5804-19; Exs. 54-57.)

Judge Sweitzer correctly determined that the Mineral Examiners qualified as expert witnesses and that their conclusions were "well-supported" by the Mineral Report and their testimony. (Decision at 20.) He therefore properly held that the Government had presented a prima facie case of claim invalidity based on lack of discovery of a valuable mineral deposit. Id. The burden of going forward accordingly shifted to Contestees.

Matheson contended that the standard fire assay on which BLM's laboratories relied cannot detect the precious metals he asserts are to be found within the Mijo claims, because the precious metals exist on the nanometer scale and are entombed by other minerals. [14/] He offered numerous, sometimes contradictory, reasons to the Mineral Examiners why this should be so, many of which were maintained by appellants' witnesses at the hearing:

- The material is "time sensitive" (Lashley, 1982). Unless samples are analyzed within 24 hours, the gold will disappear or become unassayable. The problem is at times asserted to be from volatilization of gold chlorides, and at other times from encapsulation of gold, often by calcium carbonate.

- The material's "time sensitivity" can be overcome if the material [is] spread out and dried in the sun for eighteen days.

- The material's "time sensitivity" can be overcome by using Merwin White's [White Technologies] repetitive fire assays.

[14/] A *nanometer* is a one-billionth of a meter in length. Tr. v. 17:3038-39. A *micron* is one-millionth of a meter. *A Dictionary of Mining, Mineral, and Related Terms*, Bureau of Mines, U.S. Department of the Interior (1968).

- The material is not time-sensitive if Jerry Henderson's [Complex Metals] assay methods are used.

- Normal fire assay techniques won't recover the precious metals. Only special techniques used by certain specified laboratories will work.

- Only the "Slagmaster" fire assay procedure of Walter Lashley will work.

- The "Slagmaster" fire assay procedure is unnecessary if the methods of Jerry Henderson are used.

- Only fire assays in a scorification dish (which resembles a large, flattened crucible) will work. Classical crucible fire assay won't work.

- The material won't fire assay, but it will leach. The leach chemicals are environmentally friendly, but proprietary.

- The gold is in the clay and requires special methods to detect it.

- The gold is in the minus 1/4 inch fraction and requires special methods to detect it.

- The gold is in the entire rock and requires special methods to detect it.

- If you fire assay the "head material," you will get nothing. If you run the head material over a U-Tech table, which resembles a wilfley table with rotating magnets, there will be visible precious metals in each fraction that you would not see in the unprocessed "head material." Then, and only then, will individual fire assays of each fraction work, but they have to be scorification assays using Jerry Henderson's methods.

- Only specific assayers are willing to take the time and effort to properly conduct assays. Commercial labs, at $12 per fire assay just can't compare to a lab that gives each assay intense, individual attention, but at a higher price.

- The gold can be detected if the process uses water from Idaho, but not water from Vancouver or Las Vegas.

- Gold cannot be recovered from the samples at sea level.

- Typically, no precious metal values are recovered except by certain specific labs. In some cases, normal, industry-standard labs can detect and measure the precious metals, but the samples must first be prepared (crushed and pulverized) by one of the certain specified labs.

(Ex. 2, Mineral Report at 11-12.) To support these various theories, Contestees called Phebus, Dr. Charles Ager, Dr. Clyde Smith, Henderson, Dr. William J. Guay, Charles Moore, Joel Mur, Merwin White, Mark Chatterton, Haskins, Charles Morris, Matheson, Thomas Leshendok, Clay, and Shumaker as witnesses. Mur, Chatterton, Haskins, and Leshendok, like Clay and Shumaker, are all BLM or Government employees. Judge Sweitzer characterized the witnesses in the following terms:

> Except for the BLM witnesses and possibly a few others, Contestees' witnesses' credibility is poor or questionable because of one or more factors, including demonstrated deceptiveness before and/or during their testimony, displays of incompetent performance of mining-related functions, poor reputations, convictions for crimes involving dishonesty, limited expertise, inconsistent statements, and/or farfetched assertions.

(Decision at 22.) Judge Sweitzer rejected Contestees' analytical methods as unusual, noting "widely scattered results" and extraordinarily high values, which were undermined by poor records of sampling and assay details. Id. He found the explanations of why conventional analytical methodologies would not succeed to be unsupported by adequate data, and further found that such explanations were refuted by Contestant's experts. Id.

The judge discussed the testimony of each witness, and stated his assessment of the witness' qualifications and credibility and his conclusions regarding the evidentiary value of the witness' testimony. Phebus, for example, testified as the Contestees' principal witness for the purpose of establishing the existence of a discovery before the lands were segregated. Judge Sweitzer rejected Phebus' testimony "because of his dishonesty under oath and his questionable expertise in assaying and metallurgy." Id. at 23-24. In particular, Phebus falsely testified to the existence of three 200-by-800-foot pits which served as major sampling areas. No such pits ever existed. Phebus claimed to live on the Mijo claims in 1990, but in 1992 had told a BLM Special Agent that he lived in California. Id. The witness also claimed to specialize in designing and building milling and processing equipment, but

an expert in metallurgical engineering who heard Phebus' testimony regarding the equipment he supposedly had constructed "concluded that Mr. Phebus does not 'have any competency at all' in designing milling and processing equipment and failed to display 'any understanding of fundamental metallurgical principles.'" Id. at 24, citing Tr. v. 38:5688-91.

With respect to Ager, Contestees' principal expert witness and chief proponent of the "new" type of gold deposit they hypothesize, Judge Sweitzer found Ager's "actions relating to the so-called Delgratia salting scandal, his evasiveness and lack of truthfulness during the [contest] hearing, and his bias in this proceeding" arising from his considerable personal and financial gains from the Delgratia scam provided substantial reason to doubt Ager's credibility. The basis for the Judge's conclusions is detailed at length in his opinion. See Decision at 24-30. [15/]

Matheson was Contestees' representative and a primary witness. He has neither the education nor experience to understand the technical aspects of mining (Decision at 36, citing, e.g., Tr. v. 26:3511; v. 31:4352; v. 32:4456, 4487, 4539, 4578; v. 33:4666-69.) As a result, Judge Sweitzer concluded that his lay opinions regarding such technical matters were entitled to little weight. (Decision at 36.) For a number of other reasons, he found Matheson's credibility in the balance of his testimony "suspect." Id. Matheson testified incorrectly regarding notations he had added to an assay performed by Mountain States; he signed sample data sheets showing samples were taken in December 1997, and January, February, and April 1998 by Moore, id., citing Tr. v. 22:2669-73; Ex. A-129, pp. 8A, 10; Ex. A-129, pp. 11, 12, but Moore said he did not begin work for Contestees until May or June 1998, id., citing Tr. v. 8:1341-43; he falsely claimed that BLM had never asked Gunnison to test samples, id., citing Tr. v. 22:2529, 2532-33; Tr. v. 36:5430-31; v. 39:5820; Matheson falsely testified concerning the monumentation of drill holes, id. at 36-37, citing Tr. v. 14:73-75, 89-91; v. 16:2944; v. 22:2582; Ex. 68; Tr. v. 40:5979-82; and, in the course of presenting the qualifications of Robert R. Barefoot, who assayed samples on Contestees' behalf, "carelessly or intentionally misrepresented [him] to be Dr. Ronald R. Barefoot, an analytical geochemist and professor emeritus, University of Toronto, who has never done work in Arizona. (Ex. 2, Atts. 9-8a-9-8b; Tr. v. 36:5374-75." (Decision at 37.)

[15/] Appellants submitted an unofficial video of Ager's testimony, which we viewed. Having read the transcript, we are satisfied that the video tape captured and portrayed Ager's testimony. Viewing the video confirmed the impressions that we had formed from reading the transcript, and thus we perceive no reason to second-guess Judge Sweitzer's conclusions.

Matheson's testimony was dubious in other respects. He falsely testified that BLM's Mineral Examiners suggested retaining Jordan of MRAL as an "umpire assayer" to reconcile the disparity between White's and Legend's March 16, 1999, assay results and that, as of that time, he had not worked with Jordan in years. Id., citing Tr. v. 41:6208. Matheson affirmed Phebus' false testimony regarding the three non-existent large pits purportedly drilled on the claims, id. at 37-38, citing Tr. v. 21:2479; v. 22:2569-70; v. 25:3378; v. 41:6227, 6301, embellishing that testimony on cross-examination by asserting that he saw various testing equipment and berms, id. at 38, citing Tr. v. 32:4431-51; Tr. v. 33:4742-46. Where Phebus testified that the pits were obvious (Tr. v. 38:5627-28), Matheson would not state that he had actually seen the pits, although he visited the Becki M millsite three to four times per week and occasionally walked the Mijo 16 claim, which was said to contain one of the pits. Id. at 38, citing Tr. v. 32:4431-51. Matheson's testimony attributing the so-called "Belgian assay" technique to Union Miniere was discredited by evidence from that laboratory that it "would never have used such a novel procedure." id., citing Tr. v. 38:5680; Ex. 61 at 3. Moreover, Matheson made statements that the Judge found to be "farfetched," in particular those relating to the alleged gold values to be found from Hoover Dam at the Arizona/Nevada border to Phoenix. Id., citing Tr. v. 22:2603-04.

Judge Sweitzer was similarly unpersuaded by the testimony of Contestees' assayers and the assay results they reported. Henderson of Complex Metals has repeatedly failed the examination to become a registered assayer, and that fact, coupled with his poor reputation in the mining industry (Tr. v. 39:5912-13); his failure to use proper testing techniques and equipment (Ex. 2, p. 14, 32, Atts. 11B-5b to -5d; Tr. v. 2:411-15; the poor conditions of his laboratory (Ex. 2, p. 34, Att. 11B-5c, photos L-15, L-18, L-24, L-25; Tr. v. 2:412-13) and unacceptable risk of cross-contamination (Tr. v. 2:412-14); the likelihood that Henderson salted a sample provided to him as part of the mineral examination; and Henderson's inability to produce accurate results from standards and blanks, as well as the non-reproducibility of his results (Ex. 2, pp. 31-35), convinced the Judge that Henderson's "testimony and assays have little probative worth." (Decision at 30-31.)

Moore, an individual whose formal education consisted of a geology course at Carson City (Nevada) Community College (Tr. v. 7:1112; v. 8:1335), testified that he used the so-called "Moore Radiometer" and sampling to identify "the blue structures." (Decision at 31.) The "Moore Radiometer" is Moore's term for the allegedly proprietary manner in which he analyzes the "output" generated by an EM-16 device, a machine manufactured by Geonics. Id. at 31-32. Moore's testimony was confusing and vague, but he claimed he could detect gamma rays "emanating from the center of the Earth to the surface," which enabled him to identify sub-surface structures. Id. at 32, citing Tr. v. 8:1324, 1328. Moore further claimed that the device was able to identify structures at great depth, but that "the EM-16 is really

not very accurate after, oh, 1500 feet or so." Id., citing Tr. v. 8:1325-26. The witness also claimed that the effectiveness of an EM-16 is not limited by the presence of clay or surface water. Id., citing Tr. v. 8:1364-67.

Moore's testimony was thoroughly rebutted by Haskins. Haskins has extensive knowledge of and experience in using an EM-16, and has written a BLM handbook regarding proper use of the device and similar machines. Id., citing Tr. v. 12:2167, 2174-75; Ex. 16. According to Haskins, the powers attributed to the EM-16 by Moore are "totally impossible" because gamma rays travel through soil and rock for no more than approximately 12 feet before they are absorbed, and because the device measures radio frequency waves, not gamma radiation. Further, the depth detection limit for radio frequency waves is approximately 200 feet, and the presence of clay and surface water reduces that limit to 40 or 50 feet. Id., citing Tr. v. 12:2177. Haskins' testimony revealed other flaws in Moore's testimony that plainly demonstrated that Moore's claims relative to the EM-16 are not supportable. Id., citing Tr. v. 12:2178-82; Ex. 16 at 100-13; Tr. v. 8:1366; Ex. A-50; Tr. v. 12:2179-80. Judge Sweitzer determined that Moore's credibility was further undermined by inconsistencies in his testimony.

Merwin White of White Technologies proved equally incredible. White described himself as a metallurgical chemist largely by experience, and stated that he majored in chemistry at the University of Utah before quitting without earning his degree. Id. at 33. His reputation in the industry is "very poor." Id., citing Tr. v. 5:179; v. 20:3481, v. 39:5914; Ex. 10, p. 5; Ex. 75 at 1. He and Robert Gunnison produced the assay results that were used to promote the Josh claims to the public in the Delgratia scandal. While Gunnison's results of splits of Josh samples showed insignificant gold values, White's assays of the same splits showed high values that were completely inconsistent with Gunnison's assay results. Id., citing Ex. 2, secs. 1, 2, 4.1.

A study commissioned by the Alberta (Canada) Stock Exchange to investigate aspects of the Delgratia scam was highly critical of the same conditions in White's laboratory and his poor laboratory technique. The study consultants remarked that White's statements demonstrated a "lack of scientific understanding." Further, they followed White's assay procedure according to his directions and detected no gold above background concentrations. Id., citing Ex. 80 at 1-2, 13, 14, 15-16, 19. Ultimately, the study concluded that all assay reports, other than those based on standard fire assay, "should be retracted in full." Id., citing Ex. 80 at 21.

With respect to the evidence of White's laboratory procedure, Judge Sweitzer in particular commented on the fact that White's technician had collected all the slag from a number of assays in the same bucket, which also held slag(s) from an

unknown source. Id. at 34, citing Tr. v. 36:5297-98; v. 39:5828-29. White repeatedly re-assayed the slags and produced a value for each, resulting in a report that the Judge found "either deliberate[ly] misleading or the product of incompetence." Id., citing Ex. 2, Atts. 11B-3 through 11B-3d; Tr. v. 39:5829. Moreover, as set forth in the Mineral Report, White found high gold values in the complex blanks from the yards of Clay and Shumaker. The judge dismissed White's testimony, finding that neither he nor his laboratory was reliable, and that White's credibility was "questionable." Id.

From May 1986 to April 1987, Gunnison processed samples of "head ore" taken from the Mijo claims at the Becki M millsite, including samples taken by Vincent. (Decision at 6.) He is not a registered assayer, but contrary to Arizona law, has engaged in assaying without the necessary registration. There was no evidence that he has ever received formal training in assaying. Id. at 35. Gunnison used a thiourea leach process called the "Gunnison Process," which he claimed was proprietary. Id., citing Ex. 17, p. 22; Tr. v. 4:849-52, 855-56; v. 7:1041-45; v. 19:3410-16; v. 31:4401-06, 4461-62; v. 41:6220; Ex. 17, p. 22; Tr. v. 10:1800; v. 15:157-58, 164-65, 170-74. Ager testified that a stabilizing agent made Gunnison's process proprietary (Tr. v. 18:3139-40), while Matheson stated that Gunnison had stumbled upon a chemical that made this thiourea leach reusable (Tr. v. 21:2478), and it was this characteristic that rendered his leach proprietary, but later also suggested that there was a proprietary ingredient (Tr. v. 22:2639). Gunnison reportedly obtained significant values. He refused to testify after learning that the Government intended to inquire into his leach process, and he twice refused to perform sampling tests when asked by the Mineral Examiners to do so. (Decision at 35, citing Tr. v. 10:1800; v. 15:158; v. 22:2639-40; v. 38:5761-62; Tr. v. 36:5430-31; v. 39:5820.)

Judge Sweitzer rejected Gunnison's work as lacking probative value for multiple reasons: his substantial involvement in the Delgratia salting scam; his lack of qualifications and technique; his conviction in 1975 on five felony counts, including fraud and conspiracy, arising from the sale of unregistered securities (Ex. 2, p. 10, Atts. 8-2a to -2c; Tr. v. 40:6130-31); his poor reputation in the industry; and the perception that he is a scam artist. (Decision at 35-36., citing Tr. v. 5:90, 158, 215; Tr. v. 18:3156-57; v. 20:3492; see Ex. 77 at 1.) During the hearing, Matheson claimed that Gunnison's convictions had been overturned on appeal (Tr. v. 41:6294-95), but this contention was refuted by testimony of BLM's Special Agent relating to Gunnison's official criminal history record (Tr. v. 40:6131.)

The one piece of evidence Contestees relied on to buttress Gunnison's purportedly proprietary leach process was a 1986 report that assessed non-standard methods of detecting gold values. However, that report also recommended further testing before the process could be declared proven. The author of that report stated

that his organization had no interest in the Eldorado Valley where the Mijo claims are located because it has found nothing worth an investment. Id. at 35, citing Ex. 79 at 2. Judge Sweitzer reasoned that if a process for recovering precious metal from the Eldorado Valley actually existed, the company's view would be different. Id.

Contestees' assertion that the Mijo claims contain a "new" kind of mineral deposit that cannot be detected by standard fire assaying techniques is derived from Ager's and Smith's belief that the alleged mineralization is unlike any other precious metal deposit because it is basic, sulfide deficient, and nonsilicious, where the typical deposit is acidic, sulfide, and silicious. (Tr. v. 2:528-30; v. 17:3020; v. 18:3176-80; v. 19:3289-90, 3298-99; Decision at 40.) The judge rejected Ager's and Smith's hypotheses, stating that the geologic environment of the claims is not favorable for the formation of a precious metal deposit, especially PGEs. Id. at 41, citing Ex. 2, p. 4; Tr. v. 35:5216-17; v. 36:5406-07, 5410-11; v. 37:5554; see also Tr. v. 18:3243-49; Tr. v. 18:3243-49; Ex. 2, Mineral Report at 4-6.

Ager and Smith testified that the precious metal particles are between five nanometers and one micron in size, id., citing Tr. v. 2:522-24, 527, 557, 559-61; v. 17:3005-06, 3031; v. 18:3196-97; v. 19:3438-39, 3441-42; v. 20:3498-99, and each particle is encased in refractory materials that are allegedly unresponsive to thermal or chemical processes, id., citing Tr. v. 2:534-37, 539; v. 3:583, 604-05; v. 17:3005, 3007, 3020-28, 3031; v. 18:3188, 3199-3202. They testified that the inner layer is a calcium-rich iron coating, while the outer layer is an aluminum-rich silica coating, id., citing Tr. v. 2:536; v. 3:605) that reportedly melts at 1500 degrees centigrade or 2732 degrees Fahrenheit, a temperature that is higher than the standard fire assay temperature, id., citing Tr. v. 3:587-90, 605; v. 17:3005; v. 18:3201-02; v. 19:3443. According to Ager, the coated particles are further "housed" in fine clay materials, which are also refractory and can swell with water or become too dry, melting at 1100 - 1300 degrees Centigrade. Id. at 42, citing Tr. v. 2:536, v. 3:582, 605; Tr. v. 17:3030-34, 3038, 3090, 3164-68; v. 18:3088-90; v. 19:3304-05; see also Tr. v. 14:2327-28; v. 16:2816. These coatings purportedly prevent aggregation of the gold particles to a threshold size of 10 microns, without which those particles remain in the slag instead of passing through it to report to the lead at the bottom of the crucible, or they are "off-gased as vapor." Id., citing Tr. v. 17:3024-25; v. 19:3281-83. Ager also testified that the particles must aggregate with each other or with the lead to a size of 20-40 microns. Id., citing Tr. v. 17:3039-42; v. 19:3273-81. In addition to his statements regarding the nature of the gold particles and his testimony generally describing the steps in standard versus designer fire assay and leach processes, Ager asserted that he had developed the metallurgy and certain

gold extraction protocols. See, e.g., Tr. v. 19:3393-94. However, he refused to provide any specific information, asserting that such information is proprietary. [16/]

Contestees attempted to buttress Ager's and Smith's testimony with the testimony of Guay, a well-qualified metallurgist with a good reputation in the industry. Guay had sampled and tested the Josh claims in 1993 and more recently consulted for Ager. Guay acknowledged that he is not an assayer, and did not appear knowledgeable of instrumental assay techniques. (Decision at 42-43.) Moreover, his testimony often seemed tentative or abstract. See, e.g., Tr. v. 5:163, 192-93, 234. Relying on information provided by Ager and Matheson rather than personal knowledge of the Mijo claims (Tr. v. 1:208), on the one hand Guay asserted the existence of a new kind of mineral deposit and, on the other, admitted that much remained to be proven (Tr. v. 1:210-11; Decision at 43). Guay nonetheless admitted that an aqua regia leach will free the gold (Tr. v. 1:188), and certainly seemed to admit that inductively coupled plasma analysis (ICP), a method of complete sample dissolution, can effectively assay the gold (Tr. v.1:190). Fundamentally, however, Guay stated that, because the values were highly erratic, more exploration was needed (Tr. v. 1:253); he acknowledged that the "Eldorado Valley is a research in progress" (Tr. v. 1:284) that is "worthy of investigation" (Tr. v. 1:233).

We share Judge Sweitzer's assessment of Ager's and Smith's testimony: Ager's credibility is suspect, and Smith worked under his direction; what little was divulged to support their theories was refuted by Contestant's experts; and to the extent that neither of them divulged any information on the ground that it is proprietary, they failed to show a scientific basis for their theories. (Decision at 42.) The judge therefore accorded their testimony little probative weight.

Bondar-Clegg, Chemex, Legend, CAMP, NBMG, and Pray performed fire assays of the Mijo samples. The professional reputations of Bondar-Clegg, Chemex, and Legend were not challenged. Dr. Vernon Griffiths is a consultant for CAMP, part of Montana Tech of the University of Montana. CAMP provides consulting services related to a wide variety of mineral and metallurgical topics. (Decision at 39, citing Tr. v. 38:5661-62; v. 39:5842.) Using x-ray diffraction and scanning electron microscopy/energy dispersive x-ray, Griffiths testified that he found no evidence of the coatings described by Ager and Smith. (Decision at 44, citing Tr. v. 38:5647.)

[16/] At points, Ager's invocation of the proprietary nature of the information or technology he claims to possess was so expansive as to be meaningless. For example, he refused to provide any information about the size of the mesh screen his protocol requires, sample preparation (Tr. v. 19:3395), or the nature of the coatings on the gold particles, to the extent of refusing even to comment on whether certain minerals, such as zeolite or quartz, might be found anywhere in the "Eldorado Valley ore" (Tr. v. 20:3510).

Even assuming hypothetically that the coatings exist, Pray testified that the Mijo mineral material contains ilmenite, which is refractory, but nevertheless can be consumed in a fire assay. Id., citing Tr. v. 39:5941-42; Tr. v. 36:5291-92, 5448; v. 37:5469, 5524-25. Dr. Paul Lechler, the chief geochemist at NBMG who has performed or supervised "tens of thousands" of assays using a variety of analytical techniques (Tr. v. 37:5450-52), testified that the melting temperature of various components is not critical to whether a fire assay will reliably detect any precious metals it contains; instead, it is the assay flux [17/] that must corrode the precious metal particles to allow the lead collector to catch and fuse with the precious metals. Id., citing Tr. v. 15:281-82; v. 35:5201; v. 36:5440-41; v. 37:5477; v. 38:5674; Ex. 8 at 32; Ex. 41at 25. Lechler stated that if a sample contains highly refractory material, a competent assayer will know it by observing the assay process and correct for it by modifying the flux to increase its corrosivity to dissolve the refractory material. Id., citing Tr. v. 2:433-34; v. 35:5159-61; v. 36:5305-06; 5341-42; v. 37:5467-69, 5553-55; v. 38:5668, 5670-71; Ex. 8 at 32. Notably, however, he testified that a flux can be designed to consume chromite, one of the most refractory substances known, and that most, if not all, of the coating substances alleged by Contestees are less refractory than chromite. (Decision at 45, citing, e.g., Tr. v. 37:5469; v. 36:5259; v. 37:5528-31.)

Lechler testified concerning his use of subnanometer precious metal particles in quality assurance tests, stating that, contrary to Contestees' assertions, the particles reported to the top of the cupel, and thus size is not an issue. (Decision at 46-47, citing Tr. v. 37:5473, 5581; Tr. v. 37:5474; see also Tr. v. 38:5674-75.) Dr. Corby Anderson, the director of CAMP, similarly testified that, as a matter of "fundamental metallurgical principles," micron-sized particles would actually be more likely to be corroded by the flux, and therefore more likely to be caught by the lead collector and report to top of the cupel. Id., citing Tr. v. 38:5672; see also Tr. v. 37:5482-83, 5486; Ex. 8 at 34.

[17/] In chemistry and metallurgy, *flux* is a "substance that promotes the fusing of minerals or metals or prevents the formation of oxides. For example, in metal refining an addition of some mineral to the furnace charge is made for the purpose of absorbing mineral impurities in the metal. A slag is formed which floats on top of the bath and is run off." *A Dictionary of Mining, Mineral, and Related Terms*, U.S. Department of the Interior, Bureau of Mines (1968).

Contestant's experts likewise debunked the contention that scorification, [18/] the so-called repetitive slag fire assay, and Slagmaster techniques are more reliable than a standard fire assay. As Lechler described it, the Belgian method and scorification are at opposite ends of the continuum, with the standard fire assay in between. The Belgian method uses a "very large flux component," while scorification requires a "very small amount of flux to sample." (Tr. v. 37:5484-85.) Lechler concluded that if either method works, then almost any fire assay will work. Id. at 5485. However, scorification is not a usual method because it is less accurate than a standard fire assay and, in any event, Mark Lewis, Legend's manager and a metallurgist, used Henderson's scorification technique and found no remarkable level of precious metals. (Decision at 47, citing Tr. v. 2:474-75; v. 5:273-74; v. 35:5134, 5144-45, 5156-57; v. 36:5323-32; v. 37:5565-66; v. 38:5718-20.)

Repetitive assaying of slags and/or cupels was also rejected by Contestant's expert witnesses because the reagents contain precious metals as contaminants that accumulate and become measurable, and because repetitive fusions are not necessary. Id., citing Tr. v. 15:250, 286-87; v. 35:5162-63; v. 36:5352-55; v. 37:5461, 5487; v. 40:6110-11. Moreover, in 1997, at Matheson's request, Lechler reassayed Mijo slags and found nothing remarkable in the levels of precious metals. Id., citing Tr. v. 37:5458-60, 5580-81. In sum, Contestant's experts all agreed that it was "impossible" for significant amounts of precious metals to report to the slag or cupel. Even Guay, a witness for Contestees, acknowledged as much. (Tr. v. 36:5290.)

As to the allegedly time-sensitive nature of the Mijo material, Judge Sweitzer determined that there was no basis for the phenomenon claimed. He concluded that Contestees' explanations of the phenomenon and the reasons why it allegedly exists are inconsistent and, lacking a scientific predicate, dubious. (Decision at 45-46.) Judge Sweitzer was unpersuaded by the inconsistencies in the role ascribed to various furnaces and venting, and by Phebus' and Guay's assertion that oxidation affected the alleged time-sensitivity of Mijo material. Id. at 45-46. Contestants called Pray, who has a doctorate in metallurgical engineering, has 50 years of experience in the industry, and has performed approximately 45,000 assays. Id., citing Ex. 65; Tr. v. 39:5898-5900. Pray has conducted studies using different furnaces and levels of oxygen, and found no effect on assay results for gold and silver. Id. at 46, citing Tr. v. 39:5909-11. Clay and Shumaker testified that Phebus wrongly believed that

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[18/] *Scorification* is the "separation of gold or silver by heating it to high temperature with a large amount of granulated lead and a little borax, in a scorifier." A *scorifier* is a crucible. The precious metal dissolves in the molten lead, which sinks to the bottom of the scorifier, while the impurities form a substance called *slag*. *A Dictionary of Mining, Mineral, and Related Terms*, U.S. Department of the Interior, Bureau of Mines (1968).

the material had not already oxidized before it was excavated (Tr. v. 1:166; v. 36:5313-14). In any event, several samples assayed at BLM's request were sealed in nitrogen to prevent oxidation and no unusual levels of precious metals were detected. (Tr. v. 1:23-26; v. 36:5313-14.)

The judge accepted Contestant's fire assay evidence as reliable based on several facts. First, the average crustal abundance level of precious metals detected by the Government's witnesses using standard fire assay techniques were confirmed by several other analytical techniques. Second, the reliability of standard fire assay techniques is not the subject of serious debate in the mining industry (see, e.g. Tr. v. 1:170; v. 37:5474; v. 38:5673; Ex. 8, p. 32). Finally, no witness for either party was aware of an operating gold, silver, or platinum mine mining material that could not be fire assayed, with the possible exception of one account of a small South African mine in a publication of unknown reliability (see, e.g., Tr. v. 5:171-72; v. 36:5430; v. 38:5677; Ex. SL-1). (Decision at 40.) We agree that standard fire assays reliably demonstrated that the claims do not contain a deposit of valuable minerals.

Nor do we perceive any basis for disturbing Judge Sweitzer's conclusion that none of the instrumental analytical and leach techniques probed during the hearing demonstrated that the claims contain precious metals above the level of average crustal abundance or background levels. The instrumental techniques included inductively coupled plasma mass spectrometry (ICPMS), [19/] neutron activation analysis (NAA), [20/] x-ray diffraction, scanning electron microscopy (SEM), SEM/energy dispersive x-ray spectrometry, and ocular SEM. In addition, thiourea leach testing was at issue because of Contestees' reliance on Gunnison's thiourea leach process. In his testimony on re-direct, Lechler ranked various methods according to the estimates of gold content each produces. He placed NAA at the top of the list because it "generally returns the highest value, the highest estimate of the gold content, for instance, in an analytical sample because it's a very total analysis." (Tr. v. 37:5581-82.) He stated that fire assay is also considered a "total technique" or analysis, one that is almost as accurate as NAA, being only "slightly less" so. Id. at 5582. ICP would be included with NAA as another total technique, followed by the

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[19/] As performed by Lechler, the ICPMS analysis proceeded in two steps. First, the sample was subjected to microwave digestion, which is total dissolution or consumption of the sample in acid in a closed vessel at high temperature and under high pressure to produce a liquid sample. In the second step, the weight and charge of individual ions in the liquid or "plasma" are analyzed. Id. at 5492.

[20/] Called as a rebuttal witness, Mineral Examiner Clay explained NAA involves compressing the material into tiny pellets, which are then irradiated with neutrons. The neutrons emit "specific gamma radiation based on what's in the target elements the neutrons strike." (Tr. v. 40:5972-73.) The gamma radiation is analyzed.

leach techniques. He characterized all of them as "a very good estimate of the gold content," with "slight differences" that are not significant. Id. Lechler was quite clear that even with respect to the rocks and minerals that "fall outside of the compositional range of most materials on earth," the standard fire assay flux can be adjusted to reliably assay the material. Id. at 5583. We note that Guay, appellants' expert witness, also agreed. (Tr. v. 1:190.) Lechler was equally emphatic in testifying that the Mijo material had "been analyzed to death," and that the gold content is not anomalous. (Tr. v. 37:5584.)

NBMG and CAMP analyzed the Mijo material using ICP. NBMG used ICP with mass spectrometry, while CAMP used ICP with atomic emission spectroscopy. Lechler's and Anderson's testimony regarding the performance and scientific basis for ICP clearly refuted Contestees' allegation that ICP would not be effective to detect precious metals in material from the Eldorado Valley. (Tr. v. 37:5491-96; Tr. v. 38:5686-87.) No evidence of the mineral assemblage structures Ager and Smith described and attributed to the Eldorado Valley was revealed by either form of ICP. (Tr. v. 38:5687, 5688-92.)

Chemex analyzed Mijo samples using NAA, although it is not clear whether it was thermal or epithermal NAA. See Ex. 67. Those results showed insignificant quantities of gold. (Decision at 50, citing Ex. 67 at 2.) The large mining companies who performed NAA on Mijo material also reported insignificant values. Id., citing Tr. v. 14:49-50. Moreover, Matheson claimed that, as a result of a "study" of NAA performed by Neutron Activation Services of Ann Arbor, Michigan, involving only two samples, Contestees had determined that only thermal analysis detected gold. Ager affirmed that conclusion, even though he admitted that he had never used NAA on the Eldorado material. According to Clay, however, there is no significant difference between thermal and epithermal NAA, and he therefore considers the question of which type to be irrelevant. (Tr. v. 40:5972.) Lechler agreed with Clay's conclusion. (Tr. v. 37:5489-90.) Both experts dismissed Contestees' theory that gamma rays would be absorbed by the alleged coating on the gold as "so much pseudoscientific technobabble," to use Clay's phrase, because gamma rays can penetrate several feet of concrete. (Tr. v. 40:5974.)

Griffiths analyzed Mijo samples using x-ray diffraction and SEM/EDX. With the SEM, he examined particles from the Mijo claims of a half micron in size. He detected no gold or other precious metals. (Decision at 52, citing Tr. v. 38:5634, 5640-42; Tr. v. 38:5646; Ex. 39 at 3, 8.) Griffiths also found no evidence of the coatings or the components of the coatings that Ager and Smith claimed. Id. at 52-53, citing Tr. v. 38:5642-43, 5645-47. Judge Sweitzer accorded greater weight to Griffiths' testimony because his specialized experience with these analytical techniques exceeded that of Ager and Smith, and Ager's credibility was "suspect." Id. at 53.

Contestees claimed that White had developed a proprietary thiourea leach, which Pray tested. White's formulation initially omitted an oxidizing reagent, without which a thiourea leach will leach out only a small portion of any gold values. When Pray tested the material using a properly formulated thiourea leach, however, he detected no significant gold values. Id. at 51-52, citing Tr. v. 38:5732-39; Tr. v. 39:5908-09; Ex. 53; Tr. v. 37:5940; Ex. 43; Tr. v. 38:5683-84. Anderson dismissed the notion that White's thiourea leach process was in any way proprietary. Id. at 52, citing Tr. v. 38:5685. Notably, the testimony of Contestees' key witnesses on this topic conflicted. Ager contended that the leach would succeed in detecting significant gold values only if a specific drying and grinding procedure were followed, yet with respect to Gunnison's allegedly proprietary leach, Ager stated that there were many ways of making the leach work with varying grind sizes. Id., citing Tr. v. 18:3367-71, 3382. Ager's assertion that Gunnison's leach process was proprietary was at odds with Matheson's claim that it was only the stabilizing chemical that was proprietary. Id., citing Tr. v. 15:164; Tr. v. 19:3370-73, 3377-90, 3400-04.

Judge Sweitzer ultimately concluded that Contestees failed to carry their burden of demonstrating, by a preponderance of the evidence, that the claims contain a discovery of a valuable mineral deposit. We find that the record amply supports the weight accorded the evidence and Judge Sweitzer's determinations with respect to witness credibility, and further find that the judge properly concluded that the instrumental and leach analyses used in testing the samples convincingly showed that the Mijo claims do not contain any gold values above average crustal abundance levels.

As stated, the lands embraced by the Mijo claims were segregated on June 6, 1994, for purposes of a proposed land exchange. We find no error in Judge Sweitzer's summary of the law that applies to mining claims on withdrawn public lands, or in his application of it to these facts: Contestees were obliged to show as of the date of the segregation and as of the date of the hearing that their claims contained an exposure of a valuable mineral deposit of sufficient quality and quantity to constitute a discovery.

The parties disputed the relevance of post-segregation information. Contestees contended the segregation should have been revoked in 1996 when the land exchange justifying the segregation supposedly was abandoned to the extent of the lands within the Mijo claims. The Government argued that post-segregation information was irrelevant because the evidence showed that there was no exposure of a mineral deposit and no valuable mineral deposit as of the date of the withdrawal. Id. at 57. Because we agree with Judge Sweitzer that no discovery existed at any time, this argument is ultimately beside the point.

[5] The judge nonetheless ruled on Contestees' argument that, when the Mijo lands purportedly were eliminated from the proposed land exchange, BLM was obligated to issue an order restoring the lands to mineral entry. As Judge Sweitzer held that the validity of the segregation is not justiciable, and even assuming *arguendo* that it was justiciable, under the notation rule no rights incompatible with the use so noted in BLM's land records can attach until the record is changed to show that the land is no longer segregated. D. Stone Davis D/B/A, Daisy Trading Co., 155 IBLA 133, 135 (2001), and cases cited. It is undisputed that both segregations were noted on the MTP on or before the effective date of each, and the MTP shows the lands have been segregated since June 6, 1994. Therefore, the lands were not open to mineral entry. See e.g., Stacy B. Good, 133 IBLA 119, 120 (1995); Forest Service, U.S. Dept. Of Agriculture (Heirs of Archie Lawrence), 128 IBLA 393, 397 (1994); MM Holdings, 121 IBLA 26, 30 (1991); B.J. Toohey, 88 IBLA 66, 77-82, 92 I.D. 317, 324-26 (1985), and cases cited.

Judge Sweitzer rejected Contestees' argument for a third reason. He ruled that Chatterton testified that all the lands thus segregated are still being considered as part of the land exchange, so that Contestees' argument was not factually well-founded. (Decision at 58, citing) Edward A. Snider, 152 IBLA 309, 312 (2000). In Snider, we affirmed the principle that lands remain segregated until the date established in an opening order, regardless of whether a land exchange is active or not.

Despite concluding that no discovery ever existed on the Mijo claims, Judge Sweitzer similarly went on to address the merits of appellants' pre- and post-segregation evidence. Appellants relied on Ex. A-129, containing 35 assay data sets, Ex. A-183, submitted to correct page 1 of Ex. A-129, and Exs. A-158, A-159, and A-160. [21/] The "vast majority" of the data reflected in these exhibits was collected after June 6, 1994. (Decision at 55-56.) The evidence of mineralization before that date was highly doubtful for several reasons. Of the 35 data sets in Ex. A-129, only six were prepared before June 6, 1994. These were designated as Nos. 1, 2, 3, 4, 4a, and 5. Additionally, Contestees relied on two data sets from samples submitted as Exs. A-158 and A-159.

Phebus sampled and assayed the material reported in data set for No. 1, which reflected Phebus' "best estimate of average assay results" of 0.15 oz/ton and 2.0 oz/ton, for samples taken in 1990 and 1991, respectively. (Decision at 59, citing

[21/] Exs. A-158, A-159, and A-160 were inadvertently mis-marked as Exs. A-159, A-160, and A-161, respectively. See Tr. v. 31:4238-59.

Ex. A-129 at 1-2; Tr. v. 29:3959, 3964-66.) Judge Sweitzer rejected data set No. 1 as unreliable because of Phebus' poor credibility and the lack of any meaningful information regarding the site and method of sampling or the assay. (Decision at 59-60.)

As established by the testimony of Phebus and Matheson, the samples for data set No. 2 were taken by Phebus and assayed by Union Miniere in 1990. The same questions regarding Phebus' sampling methods and the sampling point locations were presented, and no chain of custody was established. High values were reported for gold, platinum, and palladium. For the reasons summarized above, the credibility of both Phebus and Matheson was "suspect." Moreover, in a letter, Union Miniere reported that every sample received after the first one showed no commercial quantities of precious metals, leading Union Miniere to suggest the possibility of fraud. Id. at 60, citing Ex. 61 at 2.

Data set No. 3 reported 0.218 oz/ton of gold. That result was derived from a sample taken by Matheson and assayed by Rogers of Rogers Research. Matheson did not know how Rogers prepared the sample (Tr. v. 30:4098-99), and he was not even certain what kind of assay Rogers allegedly performed, although he suggested that it was unique (Tr. v. 22:2653; Tr. v. 30:4098). Rogers did not assay BLM's standards and complex blanks competently, producing wildly varying results. (Tr. v. 39:5818.) Lastly, Matheson's testimony regarding the material assayed was inconsistent with Rogers' assay sheet, and Matheson did not properly weigh the sample. Compare Tr. v. 30:4091 and Ex. A-129 at 3-1; Tr. v. 30:4092.

The fourth of the pre-segregation data sets, Nos. 4 and 4a, reported 0.037 oz/ton of gold and 0.069 oz/ton of gold, respectively, from samples taken by Matheson and Ager in October and May 1993. The samples were assayed by Barefoot of DCRS (US) Ltd. Judge Sweitzer had more than sufficient reason to reject this evidence as well. As discussed, there was no evidence that Barefoot is a qualified and reputable assayer, and Matheson, whether by design or mistake, erroneously took Barefoot to be Dr. Ron Barefoot of Canada, an analytical geochemist who has never worked in Arizona, where DCRS is located. Barefoot claimed to have analyzed the samples with a process that he refused to explain (Tr. v. 18:3227; Tr. v. 19:3426) and that Ager had never witnessed (Tr. v. 18:3227). Matheson also did not know what process was used. (Tr. v. 30:4114-15.) There were no details regarding the sample site, the samples were not properly weighed, and there were inconsistencies between Ager's, Matheson's, and Barefoot's statements regarding the kind of samples taken.

Data set No. 5 supposedly reflects the analysis of a sample taken by Matheson and assayed by Rogers, showing 0.11 to 0.33 oz/ton of gold and 0.01 to 0.05 oz/ton of platinum. In addition to Rogers' incompetence as an assayer, the process he

employed to perform the assay was not known; there were no details regarding where the sample was taken or its weight; and the assay sheet is neither signed nor on the same letterhead as other Rogers' assay reports. Judge Sweitzer therefore dismissed the data set as lacking probative value, an action with which we have no quarrel.

The data set for Ex. A-158 was derived from a sample taken by Matheson in May 1993, according to the first page of the two-page exhibit. The weight of the material was not known. A split was sent to Barefoot (reported as data set 4A in Ex. 1-129) and three splits were sent to a Brian Stone doing business as Gold Hunter. The assay "report," an undated, handwritten document lacking a letterhead, purports to show an average of 0.4235 oz/ton of gold. Barefoot reported 0.069 oz/ton for his split of the sample. Whatever processing method was employed, even Matheson had little confidence in Stone. (Tr. v. 32:4602, 4612.) Moreover, Stone's qualifications to perform assays was not established. (Decision at 64.) Judge Sweitzer appropriately dismissed this evidence as well.

The final data set was submitted as Ex. A-159. Matheson apparently took eight samples from the Mijo 17 claim; however, the material was not weighed and the sampling sites were not established. The sample was assayed by Vincent, apparently in February 1994, who allegedly reported an average value of 0.2 oz/ton of gold. There was no assay report to support that value, and no showing as to the type of sample preparation or assay method Vincent may have used. There was no evidence that Vincent, a former fireman and professional poker player, was qualified to perform assays, having been taught assaying by White, who was discredited as a competent assayer. (Decision at 65, citing Tr. v. 23:2494-95; Tr. v. 8:1467-68; Tr. v. 23:2493-94.) Lechler personally observed the "assays" conducted at Vincent's facility. Based on the dirty conditions and non-laboratory environment, poor laboratory technique, poor accuracy of the gold values to be found in the NBMG standard, and the flux Vincent used, Lechler concluded that Vincent was incompetent and not knowledgeable of the chemistry on which a fire assay is premised. (Decision at 64-65, citing Ex. 37 and Tr. 37:5453-64, 5573-76.) He testified that Vincent's results were skewed by the contamination in Vincent's facility. (Tr. v. 37:5454-57,.) Judge Sweitzer therefore properly concluded that this evidence lacked probative value.

With respect to other evidence of mineralization, there was testimony regarding gold buttons or beads allegedly recovered by Henderson, Vincent, and Phebus, and regarding bars of gold Phebus allegedly had refined. (Decision at 65, citing Tr. v. 23:2746-48, 2755; v. 29:3902-10, 3994-95; v. 31:4353-55; v. 32:4425-30; v. 41:6269; Ex. A-145.) The credibility of these individuals has been discussed elsewhere. Judge Sweitzer also noted that there was virtually no evidence showing where the samples were taken, the weight of the sample material, the weight of the

doré beads, or even evidence that the sample material from which the beads allegedly were produced came from the Mijo claims. (Decision at 65.) Evidence generally pertaining to samples of Eldorado Valley material assayed by White, Ben d'Andrimont at Core International, Hazen Research, and Dr. Paul Guadagnoli was not considered by Judge Sweitzer because he concluded, as he was bound to, that such evidence and testimony was not relevant to the question of any mineralization on the Mijo claims. Id. at 66.

Although the judge held that at all relevant times there was no discovery of a valuable mineral deposit, he also ruled on Contestees' post-segregation evidence of mineralization. See Decision at 66-78. Because we agree that the evidence overwhelmingly demonstrates lack of a discovery as of the date of segregation and as of the hearing, we do not find it necessary to say more than that our review of the record clearly confirms Judge Sweitzer's analysis of the testimony and evidence and his ultimate conclusion that little of it is reliable or probative. See Decision at 66-78. To the extent that the Judge may have considered any aspect or element of the post-segregation evidence acceptable, it plainly is insufficient to overcome the Government's case.

Regarding the allegation of bias, impropriety, and unfairness on BLM's part, Judge Sweitzer noted that Matheson had not demonstrated how such allegations were germane to the question of whether the Mijo claims contained a discovery of a valuable deposit. He nonetheless ruled that such assertions are immaterial and/or not supported by the record. Id. at 78. At the heart of these allegations is Contestees' belief that BLM refused to allow them the opportunity to reconcile the wildly divergent assay data by conducting a joint sampling and assaying effort before the Mineral Report was issued, and the further conviction that the insertion of complex blanks constituted a deception which somehow prevented them from demonstrating the efficacy of the assay procedures they claim are necessary to find significant precious metal values in Mijo material. In addition, Contestees argued that BLM unfairly suspended Pass Minerals' plan of operations in April 1999, that BLM tacitly agreed a discovery existed, and that BLM's refusal to enter into an escrow agreement caused the shut-down of their operations, thus destroying their plans to prove a discovery by commencing gold production. Id. at 79.

As to the argument that joint sampling and assaying should have been undertaken, the judge was persuaded by the importance of controlling the samples and laboratory conditions to avoid the opportunity to produce false results that would be attributed to BLM. See Tr. v. 36:5370, 5418; v. 39:5893-94. Judge Sweitzer agreed that a sampling procedure equivalent to joint sampling had occurred when the parties assayed samples from the same locations and splits of the same samples, and agreed with BLM that assaying, not sampling, was the source of the disparate assay results. See Tr. v. 2:416-17; 35:5187-90, 5242. Accordingly, based

on the strength and substance of the Government's evidence, the judge explicitly determined that joint sampling and assaying were not necessary or advisable and that Contestees were not otherwise entitled to a further opportunity to prove a discovery. (Decision at 81.)

Judge Sweitzer reviewed the evidence in considerable detail concerning BLM's efforts to use the assayers and procedures advocated by Contestees. BLM submitted samples to the facilities and persons Contestees preferred. Lewis was shown Henderson's scorification process, and he performed both Henderson's procedure and a standard fire assay and found no significant gold value. Pray used White's thiourea leach, both with and without the required oxidizer that White had omitted from his formula, and found no precious metals above average crustal abundance levels. Clay's testimony explaining why it is rare to assay or repeatedly assay the slag or cupel from a fire assay and the reasons doing so can generate false results was not challenged by Contestees, nor were they able to explain how their assayers avoided false results. Id. at 83-84. As the Decision noted, "[u]ltimately, Contestant's assays using instrumental techniques showed that there was no anomalous gold to be lost in the slag or cupel." Id. at 84.

The judge rejected the contention that Contestees were denied the opportunity to prove a discovery, noting that they could have done so at any time between 1983, when the claims were located, and 1999, when the plan of operations was suspended. Even during the suspension, Contestees could have proceeded pursuant to their mining notice, so long as they did not disturb more than five acres. The suspension was lifted in July 2000, and the hearing did not conclude until February 2002, providing yet more time to marshal evidence of a discovery. Id. at 80, 85.

Assuming a discovery *arguendo*, Judge Sweitzer further determined that Contestees had failed to prove the quantity of reserves. Id. at 92-95. Again, because we agree that the evidence unarguably demonstrates lack of a discovery as of the date of segregation and as of the hearing, we do not find it necessary to do more than note that the record amply supports the judge's analysis of the testimony and evidence, and his conclusion that, viewed in its best light, it failed to show the quantity of precious metals allegedly to be found within the Mijo claims.

Having so ruled, the judge found it unnecessary to rule on the questions of whether the claims are nonmineral in character and whether the claims are held in good faith. Id. at 2. Given the evidence adduced at the hearing, we agree that a further ruling was not necessary.

Arguments on Appeal and Analysis

[6] The party appealing has the burden of showing error in the Administrative Law Judge's decision. Elliott Coal Partners, Ltd., 147 IBLA 290, 299 (1999); Roblee Coal Co. v. OSM, 130 IBLA 268, 276 (1994); Yankee Gulch Joint Venture v. BLM, 113 IBLA 106, 129 (1990); United States v. Peterson, 47 IBLA 92 (1980). An appellant must show adequate reason for appeal with some particularity and support the allegations with arguments or appropriate evidence showing error. Conclusory allegations of error, standing alone, do not suffice. Wyoming Outdoor Council, 164 IBLA 84, 94 (2004); Las Vegas Valley Action Committee, 156 IBLA 110, 127 (2001); United States v. DeFisher, 92 IBLA 226, 227 (1986). This Board will only reluctantly overturn the Administrative Law Judge's determinations regarding witness credibility, because he or she has had the opportunity to observe the deportment and demeanor of the witnesses, and is in the best position to weigh their credibility. See United States v. Pearson, 148 IBLA 380, 390 (1999), and cases cited; United States v. Rothbard, 137 IBLA 159, 163-64 (1996).

Appellants' statement of reasons (SOR) [22/] consists of 11 assertions or points identified as arguments, without adequate citation to the record or the evidence, and 10 tabs, each containing various documents. [23/] The portion of the SOR styled "Background" consists of 30 statements or arguments, which to some degree repeat or amplify the Argument section of the SOR. Item 10 of the Background section alludes to further sampling conducted in September and October 2003 that apparently was spurred on by an abstract of a paper authored by Dr. Michael B. Cortie, titled *The Weird World of the Nanoscale*, which purportedly was presented at

[22/] Appellants initially filed their SOR on July 7, 2003. On Nov. 10, 2003, they submitted a revised SOR with the direction to disregard the first submission. To the extent not repeated in the latter pleading, appellants are deemed to have abandoned their earlier arguments.

[23/] The absence of citations to the record is not simply a matter of extending appellants the "due allowance," courtesy and latitude they requested in their Reply at 3. BLM argues that record citations are essential because of Matheson's careless and misleading characterizations of the evidence. BLM describes at length, and we have confirmed for ourselves, a number of specific instances demonstrating that a degree of wariness is well-founded. Given the sharply conflicting nature of appellants' evidence and Judge Sweitzer's findings regarding the poor credibility of their witnesses, it behooved appellants to clearly identify, with particularity, the portions of the record that support or establish every element of their reasons for appealing the Decision.

what appellants term "Gold 2003." [24/] Also in this Background section, appellants refer to a 1993 geobrome leach. (SOR at 10.) What follows is a page of information that purports to document the results of "test 1 and test 2" of the 2003 assays, and the effect of assaying "fresh" samples, in essence a resurrection of the allegedly time-sensitivity ascribed to Mijo material. According to this page, extra ordinary gold values were reported when the samples were four or fewer days old (0.047 oz/ton and 0.267 oz/ton, respectively), and no value or a dramatically decreased value was reported for samples that were 31 and 18 days old (0 oz/ton and 0.018 oz/ton, respectively). (SOR at 11.) However, this appears to contradict Ager's testimony regarding a "'designer drying methodology,' which took up to three weeks, sometimes longer" (Tr. v. 17:3037), "a number of weeks" (Tr. v. 18:3166), or "a few days to a few weeks" (Tr. v. 19:3372), to ensure the release of retained water content in the clays that assertedly entomb the gold particles and inhibit proper grinding. Guay, another of appellants' experts who expressed a great deal of confidence in Ager and his work, openly questioned the need for "extreme drying" and pronounced a 21-day drying period before a fire assay could be performed impractical. (Tr. v. 1:279-80.)

Item 27 of the Background section relates to the "Gold 2003" conference and abstracts of four papers submitted as Tab 6 to the SOR that, according to appellants, were presented at that conference. (SOR at 23-24.) [25/] These abstracts are offered to show that Ager's testimony regarding the nature and characteristics of nanogold should have been accepted by Judge Sweitzer. [26/]

The first of appellants' arguments on appeal concerns their request for a validity examination in 1998, BLM's asserted obligation to respond to their request, and the "tacit approval" of their "completed discovery" implicit in BLM's failure to respond, which induced them to proceed to grade the site, construct roads and install culverts, and place $3.5 million in equipment on the site. (SOR at 27.) Judge Sweitzer considered and properly rejected that line of argument, however, noting

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[24/] As Shumaker explains in his Second Declaration, which is appended to BLM's Answer, this is a reference to the "New Industrial Applications for Gold" conference held in Vancouver, B.C. (Canada) Sept. 28 through Oct. 1, 2003, organized by the World Gold Council and the Canadian Institute of Mining, Metallurgy and Petroleum. (Second Shumaker Declaration, ¶¶ 45-51.)

[25/] These include Cortie's abstract, as well as those authored by individuals at the Institute for Nanoscale Technology in Sydney, Australia; the School of Materials Science, Japan Advanced Institute of Science and Technology in Japan; and Birch Mountain Resources Ltd. in Calgary, Canada.

[26/] Nothing on the face of the abstracts confirms appellants' claim that they were presented at the September 2003 conference in Vancouver, and Shumaker controverts that claim. See Shumaker Declaration ¶¶ 45-51.

that appellants' request was a request for joint sampling, not a request for a mineral examination. Moreover, Pass Minerals did not perform that work, Bonanza did, and for its own purposes. Bonanza was engaged by Matheson, ostensibly to serve as a mining operator. Bonanza extracted mineral material from the claims, but its first and primary product was road base. See Tr. v. 8:1427-28; v. 8:1059-60; v. 22:2579-82; v. 23:2844; Ex. A-38. To the extent appellants may have been arguing that the Government should be estopped from challenging the Mijo claims based upon lack of discovery, Judge Sweitzer determined that they had not shown that the elements of estoppel exist. (Decision at 85.) Appellants have merely restated their position, without responding to the judge's findings or reasoning, and thus they have failed to allege specific error. More to the point, even assuming that the facts could be stretched to show conduct amounting to "tacit approval" of a discovery or mineral examination or joint sampling program, there is no provision of the mining law, and no Board or judicial precedent applying the mining law, by which a mining claimant is able to establish an exposure of a valuable mineral deposit by adverting to BLM's "tacit approval."

Appellants similarly restate their contentions with respect to the suspension of their plan of operations. They argue that they twice went into production and twice built a refinery, and that those actions are evidence that "there was enough assaying, testing and development for a prudent man to go forward into production." (SOR at 53.) Appellants maintain that had BLM not taken action on their bonds and suspended operations, they would have conclusively shown the existence of a valuable discovery by going into production. (SOR at 28-29, 53-54.) Thus, according to appellants, BLM caused Gunnison's refinery in Phoenix to close permanently and caused them to lose their mining contract with Bonanza. Appellants argue that their apparent readiness to engage in mining showed that they satisfied the requirements of the mining law, and discovery was complete." (SOR at 29.)

The Board has noted that "the best evidence of what a prudent man would do in the same or very nearly the same circumstances is what miners have or have not done over a period of years." United States v. Martinez, 49 IBLA 360, 371, 87 I.D. 386, 392 (1980), citing United States v. Wichner, 35 IBLA 240 (1978); see also United States v. Martinek, 166 IBLA 347, 404 (2005); United States v. Willsie, 152 IBLA 241, 264 (2000). In the many years that Matheson has held or been actively involved with the Mijo and other claims in the Eldorado Valley, neither he nor his associates have ever made use of the technology they claim to possess to actually begin mining. [27/] In advancing these contentions, appellants again fail to address the

[27/] To the contrary, all appellants managed to produce from the claims was common variety sand and gravel for use as road base. See also Pass Minerals, Inc.,

(continued...)

judge's conclusion that this argument is nothing more than a "red herring" because, as set forth above, the record shows that appellants had ample time before, during, and after the suspension to develop their claims. Id. at 85. More fundamentally, it is plain that appellants do not fully understand what is necessary to demonstrate a discovery of a valuable mineral deposit.

As we have said, Judge Sweitzer correctly identified and applied the law governing discovery. We reiterate that the mining law requires evidence that "minerals have been found and the evidence is of such a character that a person of ordinary prudence would be justified in the further expenditure of his labor and means, with a reasonable prospect of success, in developing a paying mine." Castle v. Womble, 19 L.D. at 457. Discovery requires a showing of a reasonable prospect that the deposit can be mined, removed, and marketed at a profit. United States v. Martinek, 166 IBLA at 351-52, 406; United States v. New York Mines, Inc., 105 IBLA 171, 182, 95 I.D. 223, 229-30 (1989). Thus, appellants' willingness to proceed with a plan of operations hardly establishes a discovery of a valuable mineral deposit, and certainly can raise no inference of a discovery that would serve to defeat the Government's prima facie case. It was, accordingly, appellants' burden to affirmatively demonstrate the requisite discovery, and this they failed to do.

Appellants next argue that the Mineral Examiners failed to employ the assay and recovery procedures they prescribed. They cite Ex. A-76 to support their further statement that many of these assayers were available to the Mineral Examiners during the course of the examination. In pursuing this argument, appellants misstate the facts of record, they misconceive the nature of the parties' burdens in a mining contest, and the Board precedents they cite in support are inapposite. First, it is simply not true that the Mineral Examiners did not attempt the assay procedures appellants advocate. The Mineral Examiners used appellants' methods, including following Guay's recommendation to use blanks. See Ex. 2, Mineral Report at 20. Lechler reassayed slags, as requested by Matheson. See Tr. v. 37:5458-60, 5580-81. Pray applied White's and Henderson's methods. See Decision at 82, 84; Tr. v. 39:5902-10; Ex. 43. Lewis followed Henderson's method. See Ex. 2, Mineral Report at 30-32.

Moreover, appellants advocated a variety of methods or aspects of known methods, some of which were wholly or partly inconsistent with each other or with the opinions expressed by appellants' own witnesses. For example, Corning Glass

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[27/] (...continued)
168 IBLA 183 (2006), which decided appellants' appeal from a decision finding a willful mineral trespass for sales of common variety sand and gravel for use as road base and as aggregate in other commodities, docketed as IBLA 2003-348. BLM's decision was affirmed.

only was asked to state the melting temperature of a material supplied by appellants, a material they contend surrounds the nanometer-sized gold particles. Corning Glass
answered that question, responding that the material submitted was ceramic and would melt at 1500 degrees centigrade, but "probably" could not be fluxed off. Ager made no meaningful effort to explain Corning Glass' response. (Tr. v. 17:3005.) He alluded to other refractory minerals that further entomb the particles and inhibit or prevent detection by standard assay methods, however, yet he also acknowledged that refractory materials do melt at high temperatures and that it is possible to rid the particles of the coating by pretreatment (Tr. v. 17:3007.) On the other hand, in describing Gunnison's method, Ager stated that Gunnison's high values were attributable to "designer drying and grinding," and that there was nothing special about his flux. (Tr. v. 17:3028.) This does not square with the testimony regarding, for example, ICP, a total digestion method of analysis. These inconsistencies were never reconciled or satisfactorily explained.

Second, the burden of proof lay with appellants. In general terms, "prima facie evidence" is evidence which is sufficient in law to sustain a finding in favor of a rule or order, but which may be contradicted. While the Government has the burden of going forward in a mining claim contest with sufficient evidence to establish a prima facie case of invalidity of the claim, it is the claimant who is the actual proponent of the rule that the claim is valid, and thus it is the claimant who ultimately must bear the burden of persuasion. United States v. Miller, 165 IBLA 342, 356 (2005) (contest after patent application filed); United States v. Conner, 139 IBLA 361, 364 (1997), aff'd Conner v. U.S. Department of the Interior, 73 F. Supp. 2d 1215 (D. Nev. 1999). It was therefore appellants' responsibility to show, if they could, using whatever techniques they deemed appropriate to the nature of the deposit they hypothesize, that they had a discovery of a valuable mineral deposit. They failed to do so, not because the Government failed or refused to follow appellants' specifications, but because appellants' own witnesses and evidence did not reliably and credibly establish the existence of a deposit using methods that could be replicated. Appellants have steadfastly ignored the critical problem in their evidence: if splits of the same material are competently analyzed using the same assay technique, the results of the analyses should be the same, within a range of plus or minus two or three percent. See Tr. v. 35:5189-90. Here, appellants' selected assayers reported different results for splits of the same sample that varied by 50 to 150 percent. They reported high values for standards and blanks if they were labeled as Mijo claim material, but no values when the splits were labeled as a standard or blank. Such facts indicate total incompetence among appellants' hand-picked assayers, perhaps even fraud, not proof that the Government failed to follow their specifications and methods.

Third, appellants cite United States v. Williams, 65 IBLA 346, 351 (1982), to support their assertion. That case clearly has no applicability to the facts presented here. Williams concerned uncontroverted evidence showing that the parties had recovered 26 or 27 ounces of gold in a 4-year period using a suction dredge. The Board dismissed the contest without prejudice to the initiation of another contest complaint because the Government had made no showing with respect to the adequacy of suction dredge mining. In contrast, here the evidence of the presence of gold above background levels, as well as the ability to recover it using the methods or processes they advocate, have been cast into doubt by appellants' own witnesses and thoroughly debunked by the Government. Accordingly, this argument lacks merit.

Appellants state that Judge Sweitzer erroneously assumed that the complex blanks were blank, and on that basis rejected their witnesses as not credible. (SOR at 32-35.) As BLM notes in its Answer, appellants rely on an October 2002 Mineral Report and Instruction Memorandum (IM) 2003-81 dated January 21, 2003, [28/] to construct their argument that the blanks in fact contained precious metals. IM No. 2003-81 directs BLM Field Offices to use suitably certified laboratories for assays. The 2002 Mineral Report, subtitled *Results of Analyses of Standard and Blank Samples Tested at Selected Assay Laboratories in North America*, is a technical report documenting a systematic survey of assay facilities that was designed to be used by BLM internally in selecting reliable assay laboratories. [29/] BLM strenuously argues that these documents cannot provide a basis for asserting error in the decision appealed. (Answer at 12.) [30/]

[7] In reviewing an administrative law judge's decision in a mining contest, we review the record developed before the judge. United States v. Waters, 146 IBLA at 189 n.14; United States v. Rice, 73 IBLA 128, 141 (1983); United States v. Mattox, 36 IBLA 17 (1978); United States v. Taylor, 25 IBLA 21 (1976); United States v. Zweifel, 11 IBLA 53, 55 (1973). Post-hearing evidence will be reviewed by

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[28/] By its terms, the IM expired on Sept. 30, 2004. It is not clear whether or when it may have been extended.

[29/] BLM provided complete, unannotated copies of the 2002 Mineral Report and IM, as well as a Second Declaration from Shumaker (Shumaker's first Declaration was submitted in connection with post-hearing matters. See Answer at 23 n.20), who designed the technical report with Mineral Examiner Clay.

[30/] BLM notes that Judge Sweitzer denied appellants' motions to reopen the hearing and to offer additional evidence. The motions were denied by orders dated Jan. 23, 2002; June 7, 2002; Jan. 27, 2003; and May 9, 2003. Additionally, the Jan. 23, 2003, order granted BLM's cross-motion to exclude everything offered by appellants after the hearing closed. That material was returned to appellants by Judge Sweitzer by cover letter dated May 6, 2003.

this Board only to determine whether a new hearing is appropriate. United States v. Richardson, 136 IBLA 22, 34 (1996); United States v. Memmott, 132 IBLA 283, 287-88 (1995); United States v. Fisher, 115 IBLA 277, 292-93 (1990); United States v. Whittaker (On Reconsideration), 102 IBLA 162, 164 (1988); United States v. Gray, 50 IBLA 209, 211 (1980).

We have reviewed the proffered evidence and Shumaker's Declaration and are satisfied that the proffer must be rejected for the purpose of showing error in Judge Sweitzer's decision. Shumaker avers that the survey discussed in the 2002 Mineral Report was expressly designed as a blind testing program, and began in July 1999. The last sample result was received in October 2002, so that the survey was ongoing while the Mijo contest was pending. (Second Shumaker Declaration ¶¶ 17, 18.) We find that the technical report and IM constitute post-hearing evidence that may not be considered for purposes of demonstrating error in the judge's decision. That finding disposes of a number of arguments concerning appellants' interpretation of these documents and what they purport. See SOR at 35-51.

In similar fashion, appellants express their disagreement with the weight Judge Sweitzer accorded Ager's testimony and credibility by voicing generalized characterizations of the evidence that are unsupported by record citations. (SOR at 51-53.) However, we have reviewed the transcript of Ager's testimony closely, and the unofficial video recording of that testimony, and cannot agree with appellants' perception of the impact of Ager's testimony or their explanation of why the judge was unpersuaded by it. As described above, appellants submitted new evidence relating to arguments presented as Background item 10 of their SOR. BLM views this evidence as an effort to rehabilitate Ager's testimony and an attempt to show that Judge Sweitzer erred in his decision. (Answer at 14.) In Tab 6 of the SOR, appellants have submitted four abstracts on the characteristics and behavior of gold on the nanoscale. The critical issue is not whether gold exists on a nanometer scale -- we are prepared to allow that it does and to accept *arguendo* that it may possess or exhibit unusual characteristics on that scale. But to accept that proposition is a far, far cry from demonstrating that such gold can presently be recovered or recovered economically.

To the extent that appellants have attempted to restore Ager's credibility by generally alleging recanted statements and/or possible judicial proceedings in Canada that may have occurred in 2003, this development, if true, cannot be used to show error in the decision on appeal. See United States v. Richardson, 136 IBLA at 34.

Appellants persist in arguing that they have been treated unfairly. (SOR at 54-59.) We begin by stating that appellants have greatly overstated and misstated the evidence to advance this allegation. For example, it is not true that the Mineral

Examiners refused to attempt their recovery procedures. (SOR at 54, 55.) The assertion that the "current appeal involves a continued pattern of unreasonable and unfair conduct by BLM" (SOR at 54) is baffling. [31/] The argument that it is "unfair and not in the public interest for the Contestees to be restricted to so called 'experts' in conventional types of mining deposits when this is a nano type gold deposit" (SOR at 57) utterly misses the mark, in that, again, the burden of proving the existence of such a deposit ultimately rested on appellants through the individuals they selected as their experts in the subject.

Appellants' evidence did not overcome the Government's strong case, not only because their evidence was vague, conflicting, doubtful, and at times frankly fantastic, but because, for a variety of reasons, Judge Sweitzer found appellants' witnesses not credible. No fraud is demonstrated by the use of complex standards (SOR at 58). The Government's evidence unquestionably confirmed the practice of submitting complex standards as a way of testing a laboratory's accuracy and reliability, as did Guay, one of appellants' expert witnesses. See Attachment 11B to Ex. 2, Mineral Report, at 2c. Moreover, appellants ignore the substantial and compelling fact that their preferred laboratories consistently found anomalous precious metal values when the blanks were labeled Mijo material and no value when they were labeled blanks. Appellants' statements simply do not demonstrate that Judge Sweitzer erred in the weighing of the evidence presented to him.

Appellants conclude their SOR by alluding to a 1973 handbook prepared by the Society of Mining Engineers (SME) and sponsored by the Department's Bureau of Mines when it existed. Appellants submitted an excerpt of that publication as Ex. A-193. That excerpt contains the following definition, which we quote in significant part to provide the entire context for appellants' argument:

> **Elusive Gold--**Gold in the form of clean free particles of micron size is present in certain rocks, from which it is being extracted commercially by simple cyanidation. * * *
>
> Gold of similar size and type also occurs in carbonaceous rock, from which it cannot be extracted by simple cyanidation. An extraction method developed by U.S. Bureau of Mines was successfully applied commercially in 1971. * * *

[31/] To the extent appellants again question the Government's intent in initiating the contest, it is well settled that, as the fee owner, the United States may regulate mining activities on Federal lands. See United States v. Grimaud, 220 U.S. 506 (1911). Recognizing that authority, the motivation of any Government agency in initiating a contest against a mining claim is irrelevant. United States v. Lehmann, 161 IBLA at 44; United States v. Mineco, 127 IBLA 181, 191 (1993) and cases cited.

> Gold in similar free form, or in organic or inorganic compounds down to molecular size particles, undoubtedly occurs in alluvium. In none of these forms would gold be susceptible to cyanidation, because free particles in alluvium are coated with mineral salt and thus insulated from the solution, and compounds would not react. No reliable method of assay for gold in these forms is known at present. The presence of significant amounts of gold in certain unconsolidated sediments has been very strongly indicated from recent research. It is expected that a method of extraction will be developed, which may also be the first method of assay.

(Ex. A-193 at 17-157 to 17-158.) Appellants place great evidentiary value on this SME excerpt, notwithstanding that the publication is obsolete and the current version of the handbook contains no such topic or description. (Tr. v. 39:5858.)

With respect to the substance of the excerpt, Shumaker expressed doubts regarding whether the penultimate sentence actually had been peer-reviewed. He viewed the statements contained in the third paragraph of the 1973 handbook as mere conjecture. (Tr. v. 39:5863–65.)

Clay dismissed the notion that the gold could not be identified as "really ludicrous" because geochemical analyses have successfully identified "ionic quantities" of gold for many years. (Tr. v. 40:6056-57.) He understood the 1973 passage as "talking about things you really wouldn't want to do a fire assay for, which is your basic placer materials," further explaining that a fire assay reveals what is present in a sample, not what is recoverable by traditional placering methods. (Tr. v. 36:5300-02.) Pray appeared to share Clay's view, repeatedly stating that placer material is not assayed (Tr. v. 39:5940-41, 5952, 5954), and hence, that it is correct that there is no reliable method of assay for such material (Tr. v. 39:5954). When pressed on cross-examination, Pray expressed his understanding of the 1973 handbook passage, stating that the handbook "says that there are indications of gold in molecular form in alluvial material." (Tr. v. 39:5955.)

On re-direct, Pray elaborated, explaining that the difficulty in assaying placer material is not that fire assay is unreliable as an assay method, it is the difficulty of sampling placer material, which he referred to as the "nugget effect." The phrase describes the result when the sample fraction contains a gold nugget or flake. If the nugget or flake is contained in the portion that is fire assayed, the result will be a false high value; if not in the portion that is assayed, the result will also be non-representative. (Tr. v. 39:5957-58.) Guay did not disagree. He testified that placer samples are not fire assayed because the precious metals values are so scattered throughout the sample material. (Tr. v. 5:274.)

We think the record contains sufficient reason to attach little significance to this passage from the 1973 handbook. Even if we were inclined to view it as important, the excerpt only posits the presence of minute gold particles in alluvium, a proposition that was the least of the weaknesses in appellants' case. It seems to us, however, that the final three sentences completely eviscerate appellants' efforts to show that the presence of molecular gold particles amounts to an exposure of gold of sufficient quality and quantity as to constitute a discovery that can be profitably recovered.

[8] What remains is the question of whether the material alleged and submitted in support of appellants' appeal provides a basis for ordering another hearing. Generally, to warrant a further hearing, an appellant must show a sufficient equitable basis for holding a further hearing. United States v. Waters, 146 IBLA at 189, n.14; United States v. Whittaker (On Reconsideration), 102 IBLA 162, 164 (1988, aff'd, Civ. No. 87-140-GF-PGH (D. Mont. Feb. 8, 1989)), and cases cited. In addition, since the purpose of granting fact-finding hearings is to develop an evidentiary record, a party submitting evidence after a hearing must not only show a compelling reason to accept evidence which was not tendered at the hearing, it must also justify its failure to submit the evidence at the first hearing. United States v. Whittaker (On Reconsideration), 102 IBLA at 164, and cases cited. Appellants must demonstrate that the new evidence could result in a changed outcome, meaning, in this case, that the claims are supported by a discovery of a valuable mineral deposit. See United States v. Holder, 100 IBLA 146, 148-49 (1987), and cases cited. We hold that appellants' newly proffered evidence, consisting of the laboratory survey and 2002 Mineral Report, and several abstracts on the subject of nano gold, clearly does not justify another hearing. [32/]

We do not agree with appellants' view of the import of the 2002 Mineral Report. Specifically, we find no error and no deception in BLM's failure to inform Judge Sweitzer of the pendency of the laboratory survey, given its nature, objective, and intended use; nor do we concur in appellants' construction of the survey results. Appellants argue that a majority of the laboratories surveyed reported some value in

[32/] On Dec. 5, 2005, the Board received a document styled "Dispute Resolution Non Chain of Custody Sample/Chain of Custody Sample" (Document). It does not appear to have been served on BLM. In this Document, appellants offer assay results from Arrakis, Inc., asserting that Arrakis "can duplicate the values found by our assaying laboratories without credentials." (Document at 1.) Appellants renew their request for joint sampling and joint assaying using Arrakis. For the reasons discussed above, we find no reason to set aside Judge Sweitzer's reasoning or ruling on previous requests to order joint assaying. Moreover, joint sampling in effect occurred in this matter. This Document also furnishes no ground for another hearing, and the request is denied.

the complex blanks, which were the same complex blanks at issue in the contest, and that Judge Sweitzer therefore was deceived and incorrectly assumed that those samples were blank. (SOR at 32-35.) [33/] They attempt to negate the weight of Pray's testimony by noting the difference between the standard values for platinum and palladium and those reported by Pray. (SOR at 33.) Thirdly, appellants seek to disqualify the Government's experts by invoking IM 2003-81, which requires BLM to use only ISO-certified laboratories [34/] for mineral assays, arguing that the testimony of all of the Government's expert witnesses must be excluded because they do not possess ISO certification. (SOR at 35-36.)

It is true that most of the facilities that participated in the survey reported values in the complex blanks. Appellants choose to believe that the values thus reported by a majority of laboratories demonstrate that the complex blanks in fact are not blank. They do not respond to another telling fact noted by BLM in its Answer: those laboratories that found value in the complex blank also reported erroneous results for most of the standards as well. See, e.g., results for Charles Butler, Can-Pay Company (Attachment 6 to 2002 Mineral Report at 4); Consolidated Noble, Copper State Analytical, Federal Testing (Attachment 6 to 2002 Mineral Report at 6); Hazen (Attachment 6 to 2002 Mineral Report at 7); Jim Humble, Ida-Met, Inc. (Attachment 6 to 2002 Mineral Report at 8). Appellants seemingly accept the reliability of NBMG's standards in general, yet if their reasoning is to be credited, the NBMG standards also contain commercial quantities of precious metals. On the other hand, with one exception, [35/] those laboratories that found no anomalous values in the complex

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[33/] Several assay results from the complex blank and standard samples used in the validity examination were reported in the laboratory survey. Because of the pendency of the contest proceeding, none of the assay results from the Mijo 16 and 17 mining claims were reported in the survey. (Second Shumaker Declaration, ¶ 14.)

[34/] We assume that "ISO" is the acronym for the International Standards Organization in Geneva, Switzerland. See *A Dictionary of Mining, Mineral, and Related Terms*, Bureau of Mines, U.S. Department of the Interior (1968).

[35/] The exception was SGS Lakefield Research (Lakefield). Both parties agree that Lakefield is a competent, ISO-certified, and reputable assay laboratory that erroneously reported anomalous values for PMGs in the complex blanks. BLM adequately and satisfactorily explained that Lakefield's results were likely derived from laboratory cross-contamination when two high-grade PMG samples, the only grade available when the survey commenced, were shipped with the lesser exploration-grade PMG samples. (Second Shumaker Declaration ¶¶ 27-33.) We note that Lakefield's results for gold and silver were within acceptable range of the "recommended value," NBMG's term for the mean precious metal concentrations derived from its multiple assays of the standard. (2002 Mineral Report at 7 n. 4.)

(continued...)

blanks also correctly reported results within the acceptable range of values for the standards. [36/] Under the circumstances, the more rational conclusion to be drawn is that the majority of the participating laboratories returned erroneous results. [37/]

Appellants specifically identify the anomalous assay results of four Arizona laboratories (Copper State, Mountain States, MRAL, and Jacobs). Appellants note that these facilities are registered with the State Board of Technical Registration and that, combined, they represent many years in business with fairly large workforces (SOR at 36-38), and argue that they are "more qualified with local knowledge to test the 'Complex Ore blanks' from the Phoenix yards of the Mineral Examiners." (SOR at 36-38.) They argue that Lakefield correctly assayed a "split of a sample of concentrate" from the Mijo 16 claim in July 2003 and found 25 oz/ton of gold. (SOR at 39.) A purported split of the same sample was assayed by ALS Chemex, Mountain States R & D International, Inc., and NVR Mining, Inc. (NVR). Chemex and Lakefield found gold values of 24.998 and 25.370 oz/ton, respectively, and NVR found 17.016 and 18.048 oz/ton, respectively. The results were submitted as Tab 9 to the SOR.

The difficulties with this information are several. All the samples were prepared after the segregation date of June 6, 1994, and we concluded above that there is no persuasive evidence of an exposure of minerals on that date that would enable us to consider post-segregation data. Lakefield's Certificate of Analysis contains the explanation that its "results were obtained using a client specified digest

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[35/] (...continued)

The facilities that correctly reported values for both the complex blanks and standards are Legend, Chemex, Bondar-Clegg (now merged with Chemex), Alfred H. Knight, Florin Analytical Services, Rocky Mountain Geochemical, and NBMG. (Attachment 4 to the 2002 Mineral Report.)

[36/] Pray's facility, Mineral Research Laboratory (MRL), in one instance reported anomalous PMG values. Specifically, MRL correctly reported that the blanks are blank, but also reported incorrect PMG results for Standard 6b. See 2002 Mineral Report at 12. It appears that cross-contamination from the high grade PGE sample likely accounts for that error. See n. 35 supra.

[37/] The results actually fell into three categories: accurate (the results fell within an acceptable range); inaccurate (the results were close to an acceptable range, but were affected by "inadvertent and minor cross-contamination or other minor error commensurate with exploration grade analysis methods"); or incompetent (the results were "so far from an acceptable range that any resemblance to acceptable results was clearly coincidental," such that "simple laboratory contamination or minor methodology error could not explain the discrepancy"). (Second Shumaker Declaration, ¶ 24.)

method which is not an accredited SGS Lakefield Research method." NVR's assay results were explained with the notations "refinery in solution" and "refinery recovered," respectively. We agree with BLM that the documents present a number of unanswerable questions that defeat any probative value they might have. Chief among them is the question of the nature and extent of the processing to which the samples apparently were subjected before they were provided for assay. In addition, Gunnison, whom Judge Sweitzer found was not credible, was responsible for performing NVR's process.

Appellants nonetheless press on with a number of assertions designed to show that Judge Sweitzer was deceived by the Mineral Examiners (SOR at 41, 46, 50), who were biased (SOR at 46) and deliberately withheld from the judge evidence that should have caused him to change his view on the credibility of appellants' assayers (SOR at 42). The withheld evidence consists of the BLM laboratory survey results and the majority of laboratory participants that were able to obtain higher values than those of "BLM's 'cherry-picked' assayers." (SOR at 45.) In other words, rather than demonstrating erroneous assay results among a majority of survey participants, appellants believe those results are properly understood as proof that gold is to be found in the Eldorado Valley in the quality and quantity they assert. We note a serious flaw in this line of argument.

Unlike appellants, we do not believe that the results reported by the majority of assayer facilities surveyed represent confirmation that the Mijo claims contain a discovery. Even assuming *arguendo* that the Eldorado Valley and Mijo claims are sufficiently alike, we simply can see no coherent basis for accepting the results of the assays of the complex blanks as an accurate assessment of value, while ignoring or rejecting those laboratories' equally anomalous assays of the NBMG blanks, nor have appellants have offered one. Moreover, if appellants' assertions regarding the fugitive nature and characteristics of the gold assertedly to be found on the Mijo claims and the proprietary method(s) needed to recover it are accepted at face value, the assays from all of the survey participants should have reflected nothing more than background levels of precious metals. The essential fact of the matter is that competently performed assays of standards and blanks, using methods of comparable precision, should result in values that are very close. Those survey laboratories that did return such results are therefore properly adjudged reliable and accurate assayers. In such circumstances, appellants' contrary interpretation, supported by no more than their conviction that the claims contain a discovery, must be rejected.

Appellants state that none of the Government's expert assayers possess ISO accreditation, and therefore, under the policy articulated in IM 2003-81, none of them could appear as experts in future hearings. (SOR at 38.) Appellants clearly intend to suggest that, absent such accreditation, Judge Sweitzer's determination that the Government's assayers were more credible than appellants' assayers should not stand.

Whether it is wholly or partly true that the Government's assayers lack ISO accreditation or not, the observation is irrelevant in the present proceeding. The IM post-dates the assays at issue in this appeal and by its terms governed any then pending or recently received assays from facilities lacking ISO accreditation. Any question regarding the accreditation of an assay pending as of January 21, 2003, or initiated thereafter is properly raised in the government action to which it relates. We therefore cannot agree that knowledge of the survey outcome would have caused Judge Sweitzer to change his mind about the credibility of appellants' witnesses, which, as BLM notes and we have confirmed in our review of this record, was based on a good number of rather compelling factors. See Decision at 53. This evidence accordingly does not show that another hearing is warranted.

Lastly, we address the four abstracts (see SOR Tab 6) and the material submitted to this Board that relate to nanometer-sized particles of gold. The task before this Board is not to determine whether gold exists on the nanometer scale or whether, on that scale, it exhibits strange or different characteristics and behavior. We reluctantly repeat for appellants' benefit that the only questions to be decided are whether, considering the record in this matter, Judge Sweitzer correctly decided that appellants failed to overcome the Government's prima facie case that the Mijo 16 and 17 claims do not contain a discovery of a valuable mineral deposit, and to the extent that appellants have proffered evidence or argument not presented during the hearing, whether such is sufficient to require another hearing. The abstracts and other material presumably were submitted to show evidence of the extent of deposits within the boundaries of their claims and to thus prove discovery. It appears that appellants hope to raise a geologic inference by offering this evidence. If so, it is a vain hope, since the law does not permit such an inference to be substituted for a showing of an exposure of a valuable mineral deposit within the boundaries of the Mijo claims. United States v. Stone, 136 IBLA 22, 43 (1996), and cases cited. At best, the proffered material merely tends to confirm the presence of gold on a nanometer or subnanometer scale; that gold exists or may exist in such form, tantalizing as it may be, is a vast step away from establishing a discovery of a valuable mineral deposit within the meaning of the Mining Law, or demonstrating that it can be recovered at a profit. No basis for another hearing has been shown. Judge Sweitzer's decision is affirmed in all respects.

On February 13, 2006, appellants filed a Motion Seeking an Order for a Demonstration of Values. Appellants request an order "compelling a demonstration of the Mijo ore process" to prove that the Mijo claims contain abundant recoverable precious metals. (Feb. 13, 2006, order at 1.) Appellants refer to contest N–75630 involving Baron Mining Corporation (Baron) that is pending before Administrative Law Judge Andrew S. Pearlstein. They state that after the contest hearings had commenced and after the mineral examination had been completed, Judge Pearlstein, BLM, and counsel for the Government, John W. Steiger, have agreed to have samples

assayed by Auric Metallurgical Laboratories (Auric) in an effort to confirm Baron's assertions regarding the precious metals to be found on its claims. Appellants have submitted a copy of the Government's opposition to Baron's Motion Seeking an Order for a Demonstration of Values. Appellants reason that the facts and circumstances of the Baron contest are very similar to this contest, so that they too should have another opportunity to prove their discovery.

Unlike the Baron contest, this matter is now before the Board, where our task is only to determine whether appellants have demonstrated error in Judge Sweitzer's decision. We reiterate that post-hearing evidence or the hope of developing post-hearing evidence cannot be used to satisfy this burden. To the extent the motion is advanced as a potential or eventual basis for ordering another hearing, appellants have neither shown a compelling reason for ordering the submission of samples to Auric when they could have done so in the long course of the contest hearing, nor justified their failure to do so. Appellants' motion is denied.

To the extent not expressly addressed, appellants' arguments have been considered and rejected.

Therefore, pursuant to the authority delegated to the Board of Land Appeals by the Secretary of the Interior, 43 CFR 4.1, the decision appealed from is affirmed.

_____
T. Britt Price
Administrative Judge

I concur:

_____
Will A. Irwin
Administrative Judge